# THE IRON TRADE REVIEW

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## STEEL PRICES

### WILL BE REDUCED UNLESS BUSINESS IMPROVES,

### And the Prospect is Not Encouraging—Immediate Change Not Expected—Limited Buying of Rails.

The market continues to drag, but in spite of lower prices and concessions that are being made, there is no evidence that united action looking toward making lower quotations will be taken in the near future, as it is generally believed that such reductions would not stimulate business. Leading manufacturers recognize, however, that, unless business conditions soon change for the better, a general reduction in prices must be made. Owing to the expected long discussion of the tariff, and other unfavorable influences, there is now little confidence in improvement before midsummer. Some extremely low prices are being made on structural material, and railroads are buying only about 45 per cent of their normal rail tonnage.

**Pig Iron Conditions**

Pig iron production for January shows an increase of slightly less than 4 per cent over December, but there is considerable complaint of shipments being deferred, and the early blowing out of some merchant stacks is probable. The Steel Corporation is now operating 60.5 per cent of its blast furnace capacity. Extreme dullness characterizes the pig iron market throughout the country. There is a general tendency toward lower quotations. In the valleys, prices have declined from 25 to 50 cents. Speculators are selling southern grades at 50 cents below the price which has prevailed for some time, $13 Birmingham for No. 2. Many furnaces are firm in their quotations, but the necessity of getting orders is growing more urgent.

**Structural Material**

The principal contracts for structural material were: The Crane warehouse, Chicago, 2,540 tons, taken by the Vierling & McDowell Co. of that city; the Monongahela bridge, 2,200 tons, and the West Penn Steel Co.'s plant, 1,000 tons, awarded to the Fort Pitt Bridge Works; the United League Club addition, Philadelphia, 1,300 tons, to James G. Doak & Co.; and the Missoula bridge to the Toledo-Massillon Bridge Co., involving 1,000 tons. Several important municipal and national government buildings in New York will require a large tonnage, and it is expected that work will be begun on them at a not far distant date. The Baltimore & Ohio railroad has ordered 37,000 tons of steel rails and 10,000 kegs of spikes; the Chicago & Great Western has ordered 5,000 tons of rails, and the Wheeling & Lake Erie 3,500 tons; the Lake Shore railroad has ordered 1,000 steel gondolas from the American Car & Foundry Co., and the receivers of the Western Maryland have contracted for 350 steel hoppers and 500 steel underframe freight cars from the Standard Steel Car Co. On the whole, however, railroad purchasing is disappointing.

**Coke and Old Material**

Prices for old material in nearly all centers are still declining, and railroads are selling their scrap at lower figures. One furnace company has made a contract for 75,000 tons of coke per year for two years, and another has ordered 30,000 tons. There is still very little activity in the coke market and prices are irregular.

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The Sloss-Sheffield Steel & Iron Co. yesterday restored its stock dividends to the 5 per cent basis, which was reduced to 4 per cent at the last quarterly disbursement.

## STEEL TIRE PLANT.

### The Inter Ocean Steel Co. Plans to Build Near Chicago.

The Inter Ocean Steel Co., a new corporation that has bought a site at Chicago Heights, Ill., has engaged Julian Kennedy, of Pittsburg, engineer, to prepare plans for the proposed new plant. The site includes 80 acres of land. It is proposed to manufacture steel tires, steel wheels for locomotives, car equipment, rolled steel sheets, etc.. There are but three like works in the country, none of which is located west of Pittsburg. It is proposed to install a complete equipment of heavy machinery throughout the plant. The site will be covered by a number of buildings of brick and steel construction, with concrete foundations. The estimate of $2,500,000 is made at this time as the probable cost. It is expected to begin at least the work of preliminary excavation within a month.

The board of directors of the Inter Ocean Steel Co. include: E. C. Converse, president of the Bankers' Trust Co., New York city; W. T. Graham, president of the American Can Co., New York city; Julian Kennedy, Pittsburg; F. H. Easton, president of the American Car & Foundry Co., New York city; John S. Runnels, vice president of the Pullman Co., Chicago; Arthur Meeker, Armour & Co.; Mason D. Starring, president of the Northwestern Elevated Railway Co., Chicago. The president is W. L. Jacoby, formerly general manager of the Latrobe Steel & Coupler Co., and the treasurer is W. V. D. Wright, who has been with the American Tin Plate Co., and in recent years was president of the Wright-Thiffault Co., tin plate dealer, Chicago. John H. Henderson, who was secretary and treasurer of the Latrobe company, will be identified also with the Inter Ocean Co. The superintendent will be Frank D. Bell, formerly of the Latrobe company.

# THE WEEK IN IRON CENTERS

## PITTSBURG.

### B. & O. Buys Rails—Pig Iron Market Dull and Prices Sagging.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Feb. 9.

Quietness and uncertainty continue to characterize the iron and steel industry. Buyers are showing in a marked degree a lack of confidence in the future demand for their own products, as well as in the stability of the present level of prices, and are strictly confining their orders to actual consumptive needs, relying upon the mills to give the desired deliveries. These there is little difficulty of obtaining under present conditions.

The general belief that a reduction of the tariff upon iron and steel articles is a reasonable expectation, has undoubtedly given rise, in a great part, to the unsettled sentiment. Added to the speculation over the tariff question, are the many reports of current shading of prices of finished iron and steel products, which are not calculated to inspire wavering confidence. It is quite apparent that there is a more general disregard of the official level in making quotations, but it is a question whether there is not some misapprehension as to the recent origin of the practice. The underselling of finished lines has been under way for months, but up to only a short time ago there was no general disposition to fasten upon it as a fact, significant of any demoralization of the trade such as now appears to be the case. While a reduction of prices, it is thought in some sources, would be salutary in quieting the anticipation of buyers, the futility of such action to inspire renewed demand at this time in the face of the open tariff question, is generally held to be apparent.

The past week brought the announcement of further contracts placed by the railroads, including that for 37,000 tons of rails by the Baltimore & Ohio and for cars by the Pennsylvania, Western Maryland and New York Central lines. The pig iron market continues dull and is sagging. Spot coke is still weak and in old material there is a more marked decline in prices.

**Iron Ore.**—A southern Ohio furnace interest during the past week contracted for a block of 2,000 tons of Mesabi Bessemer ore at the full 1908 price of $4.25 base. The ore is for delivery during the month of February.

**Pig Iron.**—A satisfactory feature of an otherwise lifeless pig iron market is the steady manner in which consumers, with few exceptions, are specifying for their metal under contract. There is no disposition to anticipate future needs or to add to the engagements of iron made just before and after the recent election, but it is evident that there is a fair melt under way which is likely to bring buyers into the market again before many weeks shall have elapsed. Total valley stocks of Bessemer and basic are reported not to exceed 50,000 tons, much of which is in few hands.

Current business is of the very desultory sort, and transactions are in small tonnages. A tendency toward weakness is shown within the limited range of the market's activity. No. 2 foundry is quoted from $15 to $15.25 valley, and the lower figure has been shaded very slightly. Basic is quotable from $15.25 to $15.50 valley, but this market is confronted with some resale iron, which is having a depressing effect. A recent sale of 500 tons to a steel company in this district for February delivery is said to have gone at a very low price. The Bessemer range is from $16 to $16.50 valley.

The Republic Iron & Steel Co. this week blew in its No. 2 Haselton furnace which has been out for relining and again has all of its nine stacks north and south in operation. In southern iron, sales of 50 tons of No. 1 to this district at $13.50 Birmingham and 200 tons to northern Ohio at $13 Birmingham for delivery up to July were made this week.

On prompt and first quarter shipment on northern iron, we quote as follows:

| | |
|---|---|
| Bessemer, valley | $16.00 to 16.50 |
| Bessemer, Pittsburg | 16.90 to 17.40 |
| No. 2 foundry, Pittsburg | 15.90 to 16.15 |
| Gray forge, Pittsburg | 15.25 to 15.50 |
| Basic, valley | 15.25 to 15.50 |
| Basic, Pittsburg | 16.15 to 16.40 |

**Ferro-Alloys.**—An Ohio steel company has closed for about 150 tons of ferro-manganese for delivery over the remainder of the year. The market in ferro-alloys is quite dull and current inquiries are very small. The market is showing a tendency to sag. We quote nominally 80 per cent ferro-manganese at $44 to $44.50 seaboard, with a freight rate of $1.95 to Pittsburg.

Imported 50 per cent ferro-silicon is quoted at $62 to $62.50 Pittsburg on forward deliveries; domestic 12 per cent, $27; 11 per cent, $26; 10 per cent, $25 Pittsburg.

**Plates.**—Car buying by the railroads is continuing in a moderate way. The Western Maryland railroad has placed its order with the Standard Steel Car Co. for 350 steel hopper cars and 500 steel underframe freight cars. These cars will likely be built at the Butler shops, and in that event the plates and shapes, about 5,000 tons, will be furnished by the Carnegie Steel Co. The New York Central lines have ordered 1,000 steel under frame box cars from the Merchants' Despatch Transportation Co., Buffalo. The Pennsylvania railroad has ordered 46 additional all steel coaches, of which 21 went to the Pressed Steel Car Co., 21 to the American Car & Foundry Co., and four to the Standard Steel Car Co. The Carnegie Steel Co. and the Jones & Laughlin Steel Co. will furnish the material for these coaches. Operations of the plate mills are not increasing. There is shading of plate prices by some independents. We quote officially:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.60c, f. o. b. mill Pittsburg. Extras are as follows per 100 pounds. Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

**Sheets.**—A meeting of independent sheet makers is being held in this city today, and conditions of the trade are being discussed. Shading of official prices by some independents is continuing, and the concession granted is not exceeding $2 a ton. This applies to both black and galvanized sheets and is especially true as to the corrugated product. Some mills are, nevertheless, strictly main-

taining prices. A number of the independents continue to operate their sheet capacities full. The American Sheet & Tin Plate Co. has in operation this week 43 per cent or 80 mills out of a total of 186. At the close of last week the company had active 46 per cent or 86 mills. An inquiry is in the market for 170 tons of corrugated steel sheets for a new steel works in this district. The Youngstown Iron & Steel Roofing Co., Youngstown, O., is receiving a steady volume of orders for its line of specialties and is running its plant to full capacity. The company states that the reported shading of sheet prices by some independent mills has no bearing upon its activities. We quote officially as follows:

Blue annealed sheets, No. 10 and heavier, 1.80c; Nos. 11 and 12, 1.85c; Nos. 13 and 14, 1.90c; Nos. 15 and 16, 2c; box annealed, Nos. 17 to 21, 2.25c; Nos. 22 to 24, 2.30c; Nos. 25 and 26, 2.35c; No. 27, 2.40c; No. 28, 2.40c; No. 29, 2.60c; No. 30, 2.70c; galvanized sheets, Nos. 10 and 11, 2.45c; Nos. 12 and 14, 2.55c; Nos. 15 and 16, 2.65c; Nos. 17 and 21, 2.80c; Nos. 22 and 24, 2.95c; Nos. 25 and 26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 2.95c; corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Jobbers are allowed $1 a ton from these prices.

**Tin Plate.**—Shipments of tin plate to the fish packers of the Pacific coast are now steadily going forward. The active season for tin plate shipments is close at hand, and the mills in anticipation are piling stock against contracts which have not been specified. Prices in tin mill products are not absolutely firm. There is cutting in black plates and some independent makers are also shading official tin plate prices to get business. The largest maker continues to operate 164 mills or 68 per cent, which has been its record for the past several weeks. We quote official prices as follows: Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

**Rails and Track Material.**—The Baltimore & Ohio Railroad Co. has closed for 37,000 tons of open-hearth and Bessemer rails, of which the Carnegie Steel Co. will roll 10,000 tons. The rails are for practically prompt delivery, and the Carnegie Steel Co. will start at once upon the rolling of the order at the Edgar Thomson works. It is likely that a supplementary order may be placed later by the company. The Baltimore & Ohio railroad has also closed for 10,000 kegs of spikes and a quantity of track bolts. The New York Central tonnage is still hanging fire. The Wheeling & Lake Erie railroad has ordered 3,500 tons of rails. Domestic light rail business of the week amounted to 1,300 tons. The prices of the re-rollers continue to be met by the mills rolling from billets. On present specifications on Bessemer rails we quote as follows, the base price for open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $32; 12-pound, $29; 16-pound, $27; 20-pound, $26; 25 to 45-pound, $25; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

**Steel.**—A steady specifying against contracts is being done by some finished steel consumers. Little new business is being offered, but an inquiry for 1,000 tons is current. Some shading of billet prices by several small makers is reported.

Bessemer and open-hearth billets, base sizes, are quoted at $25 Pittsburg, and forging billets at $27 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $2, and sheet and tin bars at $27.50 Pittsburg, valley and Wheeling territory, and $27 Pittsburg for delivery to other points.

**Hoops and Bands.**—Conditions in hoops and bands show little change. There is no new buying of consequence, but specifications against extended contracts are fair. There is some irregularity in prices. Official prices are as follows:

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c, base half extras as per standard steel.

**Merchant Bars.**—Some of the principal makers of steel bars continue to operate at about 50 per cent of capacity. Specifications are steady, as consumptive needs are forcing users to file orders. Reinforcing bars are more active because of the approach of the spring building season. Steel bar prices are reasonably firm. Bar iron is moving moderately and appears well settled on the 1.50c delivered basis in Pittsburg territory and the west. The eastern market is more erratic. We quote officially:

Common iron bars, 1.50c Pittsburg in carload lots and over; 1.55c in less than carloads, 1.32c to 1.35c base Pittsburg, plus freight to point of shipment on western deliveries; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3-inch, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 57 per cent in carloads, and 52 per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.60c base. Iron finished tire under 1½ by 1½ inches, 1.55c, plus ½ extra on tire card; iron finished tire, 1½ by ½ and over, 1.40c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch and thicker, we quote base prices for 100 pounds, $3.35 on hard, and $3.60 on soft.

**Structural Material.**—General dissatisfaction among fabricators as to the low prices required to take current business remains in evidence. Considerable business is being offered, but the price situation is keeping sentiment less hopeful. The shape mills are getting only fair specifications. The commissioners of Allegheny and Washington counties have finally awarded to the Fort Pitt Bridge Works, the lowest bidder, the contract for the joint bridge which will cross the Monongahela river at Monongahela City, Pa. About 2,200 tons will be required. The Fort Pitt Bridge Works has also secured the contract to fabricate and erect 1,000 tons for the new works of the West Penn Steel Co., at Brackenridge, Pa. The steel for the new Jenkins building, about 400 tons, will go to the American Bridge Co. Bids were taken the past week for an addition to the West Penn hospital of this city, which will require about 1,200 tons. Official prices are:

Beams and channels, 15-inch and under, 1.60c; over 15 inches, 1.70c; zees, 1.60c; tees, 1.65c; angles from 3 to 6 inches, 1.60c; over 6 inches, 1.70c; universal and sheared plates, 6¼ inches, and wider, 1.60c base.

**Merchant Pipe.**—The month of January, usually a dull period in merchant pipe, as far as actual consumption goes, this year showed some gain over December in the tonnage shipped by the

principal maker. There is a steady buying of merchant pipe for consumptive needs, as no heavy stocks are being carried. A number of promising projects which have not yet crystallized are in the market. A gas company has closed for six miles of 4-inch and one mile of 3-inch pipe for Oklahoma, and a local light and heat company has taken 10,500 feet of 4-inch pipe. Prices on pipe are said to be firm. We quote the following official base discounts subject to five off to jobbers, while a few of the very large jobbers with mill connections are given an additional one point off:

| | —Steel— | | —Iron— | |
|---|---|---|---|---|
| | Black. | Galv. | Black. | Galv. |
| ¼ to 6 inches.... | 75 | 65 | 73 | 63 |

**Boiler Tubes.**—The market in boiler tubes continues quiet, as it is receiving but limited support from locomotive building and new power construction. The National Tube Co. reports a favorable demand for its Spellerized steel tubes. We quote the following official discounts to the general trade on base sizes:

BOILER TUBES.

| | Iron. | Steel. |
|---|---|---|
| 2¼ to 5 inches..... | 52 | 65 |

**Wire Products.**—The present season in wire products is normally quiet, but the prospects for the future are not exactly satisfactory to makers. Buyers are reluctant to engage material for extended delivery, and, while specifying regularly, are not consuming heavily. The spring trade is expected to increase activities. We quote official prices as follows:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c and to retailers in carloads, 1.85c.

**Wire Rods.**—The rod consumers in this territory are practically all under contract and new business is in odd lots. The contracts expiring at this period are being regularly renewed. We quote $33 Pittsburg on Bessemer and $34 Pittsburg on open-hearth rods.

**Coke.**—An eastern furnace interest has closed on a two-year sliding scale contract for 75,000 tons of furnace coke annually. The contract begins to run July 1. Another furnace has contracted for 30,000 tons of furnace coke for shipment March 1 and Oct. 1. Conditions are still irregular principally for spot delivery, due to absence of a ready market to absorb all the coke being made. While operations have been somewhat curtailed among those independent interests which have no assured market for their output, and the situation thereby technically improved, considerable material is in the hands of middlemen and is disturbing conditions. Operations in the Connellsville region show little change because some makers who are well sold up have increased their activity and in so doing have off-set the effect of any shutdowns or banking of ovens by other interests. There is some contracting in foundry coke and an Ohio interest is inquiring for 5,000 tons for extended shipment. Foundry coke is being well specified. We quote the spot market on high grade furnace coke at from $1.60 to $1.75 ovens and on contract from $1.90 to $2 ovens. On first-class Connellsville foundry coke for immediate shipment the price ranges from $2 to $2.25 ovens, and on contract from $2.25 to $2.50 ovens. The *Courier's* figures for the week ending Jan. 30 show 23,564 active ovens with an output of 265,514 tons, compared with 23,598 active ovens with an output of 267,709 tons the preceding week.

**Old Material.**—The market is weakening generally and most grades in the past week showed sharp declines. There is little demand from consumers and the market has plenty of offerings in proportion to the demand both from current production and from stock. The Pennsylvania lines west accepted heavy concessions in price this month on their list as compared with January. The Pennsylvania railroad has also closed on a medium-sized accumulation while the Baltimore & Ohio took bids up until today on its list which included 7,000 tons of rerolling rails. We quote gross tons delivered in the Pittsburg district as follows:

Heavy melting scrap, $15.50 to $16; re-rolling rails, $17 to $17.50; bundled sheet scrap, $13 to $13.50; iron axles, $21 to $22; old iron rails, $18 to $18.50; No. 1 wrought scrap, $16.50 to $17; old car wheels, $16 to $16.50; low phosphorus, $18 to $18.50; machine shop turnings, $10.50 to $11; cast borings, $8.50 to $9.50; No. 1 cast scrap $14.50 to $15; malleable, $14.50 to $15.00; stove plate, $11.50 to $12.

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F. W. Ayer and Thomas Gibson have resigned as directors of the Lake Superior Corporation, and have been succeeded by Messrs. Gow and Whigham, who will represent the Scottish interests which recently came into the company. Robert Fleming, who recently secured financial control of the corporation, has sailed for London to consult financiers newly interested in the corporation.

## CHICAGO.

### New Business Light—Shading Prices on Various Finished Products.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Feb. 9.

For the seeker after bright features in the review of the past week, there is some discouragement in store, for new business is generally lacking. Of rails, 12,600 tons, of structural steel contracts, less than 5,000 tons, of cast iron pipe, 4,650 tons—these are the important tonnages of which the new business of the past week is comprised. There is considerable satisfaction obtainable, however, from the manner in which specifications are being received and the mills find themselves still able to maintain the 60 per cent gait which has been their portion for some time past. Prices of plates, sheets and structural steel are being subjected to severe shading, the only remedy for which seems to be the placement of increased tonnage whose advent is exceedingly uncertain. The old material market is very quiet, but displays no additional weaknesses. There is little interest evidenced in pig iron by melters, the furnaces are increasingly in need of business and there is evidence that the present level of prices is somewhat endangered.

**Pig Iron.**—From the standpoint of transactions and tonnage, the past week has brought out almost nothing of interest. A few sales of carload lots and up to 100 tons and one sale of 300 tons are reported. The nominal prices continue to be $13 Birmingham for southern No. 2, and $17 furnace for local iron, but interests locally and in the south affirm that business is being lost continually because better than that is being done. No actual evidence has been brought out, however, with regard to the sales of the past week showing that small lots for nearby delivery can be had below the basis of $13 Birmingham. But many furnaces have need for orders and the situation is not as firm as could be desired. The extent to which shipments of iron are being held up is somewhat diminished apparently and is confined especially to malleable iron. We quote for first half delivery as follows:

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|---|---|
| Lake Superior charcoal ..... | $19.50 to 20.00 |
| Northern Foundry No. 1..... | 17.50 to 18.00 |
| Northern Foundry No. 2..... | 17.00 to 17.50 |
| Northern Foundry No. 3..... | 16.50 to 17.00 |
| Southern foundry No. 1..... | 17.60 to 18.10 |
| Southern foundry No. 2..... | 17.10 to 17.60 |
| Southern foundry No. 3..... | 16.60 to 17.10 |
| Southern foundry No. 4..... | 16.10 to 16.60 |
| Southern No. 1 soft..... | 17.60 to 18.10 |
| Southern No. 2 soft..... | 17.10 to 17.60 |
| Southern gray forge..... | 15.85 to 16.35 |
| Southern mottled ..... | 15.60 to 16.10 |
| Southern silveries, 4 per cent silicon ..... | 18.10 to 18.60 |
| Southern silveries, 5 per cent silicon ..... | 18.60 to 19.10 |

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|---|---|
| Southern silveries, .6 per cent silicon | 19.10 to 19.60 |
| Jackson Co. silveries, 6 per cent. | 19.90 to 20.40 |
| Jackson Co. silveries, 8 per cent. | 20.90 to 21.40 |
| Jackson Co. silveries, 10 per cent | 21.90 to 22.40 |
| Malleable Bessemer | 17.00 to 17.50 |
| Standard Bessemer | 17.90 to 18.40 |
| Alabama basic | 17.35 to 17.85 |

**Billets.**—With the exception of a small order of rolling billets bought by the leading agricultural implement interest in the east for its eastern plant, the market offers very little in the way of billet orders. The routine requirements of forging billets constitute the only movement to be noted. We quote 4 x 4-inch rolling billets $26.50, forging billets $23.50 base Chicago.

**Merchant Bars.**—A striking contrast exists between the unusually good volume of specifications being received for both iron and steel bars and the great lack of new business. Last week by comparison ranks well up in the aggregate tonnage of specifications received and the first two days of the present week have brought in a very encouraging quantity of orders. It is understood that the offer of a western road of a desirable tonnage of bar iron on the basis of $29 a ton was not accepted by any of the mills, but it is believed that the extended delivery asked was also undesirable. Mills in this territory are operating about 60 per cent. We quote as follows:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth finished tire steel, 1.78c; iron finish, up to 1½ x ½-inch, 1.73c base tire card; iron finish, 1½ x ½-inch and larger, 1.58c base steel card; channel for solid rubber tire, ¾ to 1 inch, 2.08c; and 1⅛-inch and larger, 1.98c; smooth-finished machinery steel, 1.83c; flat sleigh shoe, 1.63c; concave and convex sleigh shoe, 1.83c; cutter shoe, 2.95c; toe calk steel, 2.13c; railway spring, 1.93c base steel card; vehicle spring steel, 1.98c base vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.90c to 2c, full extras; soft steel bars, 1.80c per 100 pounds base, plus half extras; soft steel hoops, 2.30c full extras.

**Plates.**—The weakness with regard to prices continues to make the plate situation very unsatisfactory, in addition to the fact that the tonnage is a minimum. We quote as follows for Chicago delivery:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.78c Chicago. For extras see Pittsburg report. Shippers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 inches to 96 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.15c; 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.10c to 2.15c. Flange and head quality, 25c extra.

**Sheets.**—The demand for galvanized and corrugated sheets is fair, but in the heavier gages a marked quietness prevails. Prices are not so firm as they have been recently. We quote store prices as follows, for mill prices see Pittsburg report:

No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c; galvanized sheets, Nos. 10 to 16, 3.05c to 3.10c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4c; No. 30, 4.40c to 4.50c.

**Structural Steel.**—While prices for fabricated work are very much cut to pieces and the situation remains as it has been for a year past, one in which profits are impossible, the tendency during the last month has been toward improvement with respect to tonnage. The Chicago shops of the leading interest are pushing as rapidly as possible 10,000 tons of steel for the Gary plant and in addition took last week 375 tons for a Chicago & Northwestern bridge at Chicago, 285 tons for the Great Northern elevator at Superior, Wis., and 544 tons for the Marquis building in San Francisco. Other orders placed included 2,542 tons for the Chicago warehouse of the Crane Co., which was placed with the Vierling, McDowell Co. by Lanquist & Illsley, general contractors, 1,000 tons for the Missoula bridge awarded to the Tolelo-Massillon Bridge Co. by the Berrell Bridge Co., erector, to which the original contract was let. Court house projects involving an aggregate of 2,000 tons and an expenditure of approximately $1,350,000, are being figured upon at Newton, Ia.; Sigourney, Ia., and Omaha, Neb. We quote for Chicago delivery as follows:

Beams and channels, 3 to 15 inches, inclusive, 1.78c to 1.81c, delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $1.95 per 100 pounds; angles over 6 inches, $2.05 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.95 per 100 pounds, base; channels, 3 inches and larger, $1.95 per 100 pounds base. Less than carloda lots are $1 a ton higher than foregoing prices.

**Rails and Track Supplies.**—The only rail purchases of interest to the west during the week under review were 5,000 tons for the Chicago & Great Western and an apportionment of 7,600 tons of the Baltimore & Ohio order. Both orders were placed with the Illinois Steel Co. Specifications are fair, but the new business from the railroads is light. We quote as follows:

Standard Bessemer rails, $28; open-hearth, $30, f. o. b. mill in 500-ton lots and over; less than 500 tons, $2 extra, full freight to destination; light rails, 25-pound to 45-pound, $26; 20-pound $27; 16-pound, $28; 12-pound, $29. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.15c to 2.25c; with hexagon nuts, 2.30c to 2.40c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

**Merchant Pipe and Boiler Tubes.**—The trade in tubular goods does not offer anything of special interest. As compared with other products the price situation covering steel pipe and tubes may be viewed with considerable satisfaction. The next few weeks should also bring an increase in tonnage in anticipation of spring requirements. We quote mill discounts as follows:

| | —Steel— Black. | Galv. |
|---|---|---|
| ¼ to 6 inches, inclusive | 73.2 | 63.2 |
| 7 to 12 inches, inclusive | 70.2 | 55.2 |

BOILER TUBES.

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 2¼ to 5 inches, inclusive | 63.2 | 50.2 | 50.2 |

**Cast Iron Pipe.**—A fair degree of interest has been shown in cast iron pipe. A gas company of Minneapolis bought 1,200 tons of gas pipe last week from the United States Cast Iron Pipe & Foundry Co., which company also took the contract for 1,200 tons for the city of Enid, Okla. The contract for 150 tons at Kalamazoo, Mich., went to a local supply house, 100 tons at Hammond, Ind., was taken by the Lynchburg foundry, and 2,000 tons at Minot, N. D., was awarded to James Kennedy, contractor of Fargo. The letting at Kansas City for about 9,000 tons has

been readvertised for the 11th inst., and the letting at Hugo, Okla., for 1,500 tons has been postponed 30 days. Battle Creek, Mich., is to buy 300 tons of pipe. Very fair prices are being obtained. We quote as follows:

Four-inch water pipe, $23; 6 to 14-inch $27; larger sizes, $26; gas pipe, $1 a ton higher.

**Wire Products.**—With the exception of barb wire, which has not opened up as well as hoped for, the trade in wire products is doing very well. Plain wire is in good demand and both specifications and new business are in moderately good volume. We quote as follows for Chicago delivery:

Wire nails, jobbers' carload lots, $2.13; retailers' carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.28; retailers' carload lots, $2.33, with 30c for galvanizing; plain wire to jobbers in carloads, 1.98c, and to retailers in carloads, $2.03. Wire rods, Bessemer, $33; open-hearth $34; chain rods, $33, f. o. b. Pittsburg.

**Old Material.**—Although the Chicago, Burlington & Quincy is reported to have disposed of 4,500 tons of rerolling rails which it recently listed and at the market price, it is generally true that the railroads are able to sell only the odds and ends of their offerings, at prices that seem to them to warrant moving the material. It is also unusual at present for such scrap as is moved to be turned over at a profit. The sale of 2,500 tons of heavy melting steel at $13.50 delivered is reported and $14 is being offered locally. There has been little change in the market in the past fortnight. The Wisconsin Central has issued a list of scrap including about 400 tons of various grades and 1,300 car wheels. We have revised our prices and quote:

| | |
|---|---|
| Old car wheels | $15.25 to 15.75 |
| Old iron rails | 18.25 to 18.75 |
| Re-rolling rails (4 ft. and over) | 15.00 to 15.50 |
| Old steel rails (4 ft. and under) | 14.50 to 15.00 |
| Light section relayers, 45 lbs. and under, subject to inspection | 21.00 to 23.00 |
| Relaying rails, subject to inspection | 19.00 to 19.50 |
| Frogs, switches and guards | 13.75 to 14.25 |
| Heavy melting steel | 13.50 to 14.00 |

We quote, net tons, as follows:

| | |
|---|---|
| No. 1 R. R. wrought | $13.00 to 13.50 |
| No. 2 R. R. wrought | 12.00 to 12.50 |
| Knuckles, couplers and springs | 13.00 to 13.50 |
| Shafting | 16.00 to 16.50 |
| Iron car axles | 18.75 to 19.25 |
| Steel car axles | 17.75 to 18.25 |
| Dealers' forge No. 1 | 10.25 to 10.75 |
| Pipes and flues | 9.75 to 10.25 |
| No. 1 cast, 150 lbs. and less | 12.75 to 13.25 |
| No. 1 mill | 7.75 to 8.25 |
| Mixed busheling (Nos. 1 and 2) | 7.75 to 8.25 |
| Country sheet | 5.50 to 6.00 |
| No. 1 boiler cut | 9.75 to 10.25 |
| Boiler punchings | 12.00 to 12.50 |
| Cast borings | 6.50 to 7.00 |
| Mixed borings, etc | 6.50 to 7.00 |
| Machine shop turnings | 8.00 to 8.50 |
| Railroad malleable | 12.25 to 12.75 |
| Agricultural malleable | 11.00 to 11.50 |
| Stove plate and light cast scrap | 11.75 to 12.25 |
| Old iron splice bars | 15.50 to 16.00 |

## CLEVELAND.

### Prices of Pig Iron, Coke and Scrap Soft—Labor on the Lakes.

Office of THE IRON TRADE REVIEW, Browning Building, Feb. 9.

**Iron Ore.**—A meeting of union labor officials is being held in Detroit this week to form a marine council and bring about harmonious working of the various unions on the lakes. Owing to the fact that employment was irregular during the past season, leaving many of the men in poor financial condition at its close, it is not thought that many will take the chance of losing all employment by going on strike at the opening of navigation, and no serious trouble is anticipated. The Lake Carriers' Association has announced that it will not reduce wages, but will insist on the open shop. Some of the union men are being expelled for making individual contracts.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

**Pig Iron.**—The inquiry for basic reported last week has not been closed. The local branch of the leading pipe interest is understood to have purchased from 3,000 to 4,000 tons of foundry grades through brokers. No inquiries of importance have developed, and there is not enough business to test prices. There is some complaint of foundries not taking iron on contracts, but for the most part, Cleveland foundries seem to be doing better than in other centers. Valley prices on Bessemer and foundry grades have declined about 25 cents per ton. We quote, delivered in Cleveland, as follows:

| | |
|---|---|
| No. 1 foundry | $16.75 to 17.00 |
| No. 2 foundry | 16.25 to 16.50 |
| No. 3 foundry | 15.75 to 16.00 |
| No. 2 southern | 16.85 to 17.35 |
| Gray forge | 14.00 to 14.50 |
| Bessemer | 16.90 to 17.15 |
| Lake Superior charcoal | 19.50 to 20.00 |
| Jackson Co. 8 per cent silvery | 20.05 |

**Coke.**—The market is soft for spot coke, and the demand limited. Standard foundry coke on contracts we quote at $2.25 to $2.40, and furnace coke on contracts, $1.85. For prompt delivery we quote furnace coke $1.50 to $1.60, and foundry at $2 to $2.15.

**Finished Material.**—The leading interest has sold 3,500 tons of standard section steel rails to the Wheeling & Lake Erie railroad for March and April delivery. The fact that when railroads buy they ask for early delivery is considered a favorable indication. The finished material market in general is very quiet, and it is evident that business is not being transacted in as large volume as it was during January. Bids for the new building of the Brotherhood of Locomotive Engineers, which will require 2,100 tons, will be received until Feb. 24; bids for the structure which the Bailey Co. will erect on Euclid avenue, 1,200 tons, will be received about April 1. The Great Lakes Towing Co. will build two tugs, for which steel amounting to about 300 tons is contracted for. In spite of the cutting on other lines, sellers of steel bars say that prices on that product are being rigidly maintained. Bar iron is dull, and mills have difficulty in getting enough orders to keep in operation.

**Old Material.**—A perceptible softening of the market was again noted the past week, rails dropping 50 cents a ton and old car wheels $1 a ton. There is little material moving from dealer to consumer, and brokers regard the market as unsatisfactory. We quote f. o. b. Cleveland, as follows:

| | |
|---|---|
| Old iron rails | $18.00 to 18.50 |
| Old steel rails (re-rolling) | 16.00 to 16.50 |
| Old steel rails (under 6 feet) | 16.50 to 17.00 |
| Old car wheels | 15.00 to 15.50 |
| Old steel boiler plate | 13.00 to 13.50 |
| Malleable iron (railroad) | 14.50 to 15.00 |
| Steel axles | 20.00 to 20.50 |
| Malleable iron (agricultural) | 13.50 to 14.00 |
| Heavy steel | 14.50 to 15.00 |
| Country mixed steel | 13.50 to 14.00 |
| Low phosphorus | 17.00 to 17.50 |

We quote, net tons, as follows:

| | |
|---|---|
| No. 1 R. R. wrought | $15.00 to 15.50 |
| No. 1 busheling | 13.00 to 13.50 |
| No. 1 machine cast | 13.50 to 14.00 |
| Iron axles | 19.00 to 19.50 |
| Axle turnings | 10.50 to 11.00 |
| Machine shop turnings | 9.00 to 9.50 |
| Grate bars | 12.00 to 12.50 |
| Pipes and flues | 12.00 to 12.50 |
| Tank iron | 12.00 to 12.50 |
| Hoop and band iron | 9.25 to 9.75 |
| Sheet iron | 8.50 to 9.00 |
| Wrought drillings | 9.00 to 9.50 |
| Stove plate | 12.50 to 13.00 |
| Cast borings | 8.00 to 8.50 |

## CINCINNATI.

### Speculative Iron Being Sold at $12.50 —Furnaces are Firm.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., Feb. 9.

**Pig Iron.**—A local consumer who has been considering the purchase of 1,500 tons for the past two weeks, bought 800 tons, part northern and part southern this week, which is the only sale in this territory of importance. The general situation remains exceedingly quiet and the few inquiries received are for small amounts. Furnaces continue to hold their prices at $13 Birmingham for

southern iron and in the Ironton district $15.50 at furnace for No. 2 foundry. A small transaction involving 300 tons of southern gray forge at $11.50 Birmingham indicates the market on this grade. Speculative iron is being offered at $12.50 Birmingham by one interest and some of this tonnage has been sold in small amounts. The remaining tonnage in the hands of this particular interest is not large, but on a market like this, when the demand is so small, it becomes a disturbing factor. Jackson county silvery remains quotable at $18.50 for 8 per cent silicon. There appears to be little to report concerning the melt, which is believed to be slightly increasing, but aside from interests allied to agricultural implement manufacturers, foundry trade is dull. While there is considerable speculative iron held here and in this territory, some of the investors are not inclined to push their holdings on so dull a market as this and have practically withdrawn the iron for the present. Consumers continue to request the furnaces to hold up shipments and the dullness prevailing imparts a weak tone to the situation. We quote for prompt delivery and for remainder of the first quarter, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

| | |
|---|---|
| Southern foundry No. 1 | $16.75 to 17.25 |
| Southern foundry No. 2 | 16.25 to 16.75 |
| Southern foundry No. 3 | 15.75 to 16.25 |
| Southern foundry No. 4 | 15.25 to 15.75 |
| Southern No. 1 soft | 16.75 to 17.25 |
| Southern No. 2 soft | 16.25 to 16.75 |
| Southern gray forge | 14.75 to 15.25 |
| Northern No. 1 foundry | 17.25 to 17.70 |
| Northern No. 2 foundry | 16.70 to 17.20 |
| Northern No. 3 foundry | 16.20 to 16.70 |
| Northern 8 per cent silicon | 19.70 |

**Firished Material.**—Specifications on contracts are fair, but the incessant rumors of price reductions is curtailing demand to some extent, although the general situation is rather inactive.

**Coke.**—The accumulations at the ovens have been reduced recently by the blowing out of some operations and there is less urgency to dispose of some grades which have been pressing upon the market. Prices have remained unchanged, but the market is slightly steadier. The following quotations in the leading coke producing districts represent the range for prompt shipment coke and contract quotations. The inside figures are prompt shipment prices and the outside quotations are the prices quoted on contracts.

| | PER TON. |
|---|---|
| Wise county furnace coke | $1.75 to 1.90 |
| Wise county foundry coke | 2.10 to 2.30 |
| Pocahontas furnace coke | 1.85 to 2.00 |
| Pocahontas foundry coke | 2.00 to 2.25 |
| Standard Connellsvills furnace coke | 1.50 to 2.00 |
| Standard Connellsville foundry coke | 2.00 to 2.50 |

**Old Material.**—The demand continues light and the market rules dull with prices showing a downward tendency. Our quotations are revised this week to a lower basis representing dealers' selling quotations:

| | |
|---|---|
| Old No. 1 R. R. wrought, net tons | $14.50 to 15.00 |
| No. 1 machinery, net tons | 13.00 to 13.50 |
| Old iron rails, gross tons | 17.00 to 18.00 |
| Old steel rails (re-rolling) gross tons | 15.00 to 15.50 |
| Old short lengths, gross tons | 15.00 to 15.50 |
| Old iron axles, net tons | 17.00 to 18.00 |
| Heavy melting scrap, gross tons | 14.00 to 14.50 |
| Stove plate, net tons | 10.00 to 10.50 |
| Heavy turnings | 8.00 to 9.00 |
| Cast borings, net tons | 5.00 to 6.00 |
| Car wheels, gross tons | 14.50 to 15.00 |

## ST. LOUIS.

### Softness in the Pig Iron Market—A Very Dull Week.

Feb. 8.

**Pig Iron.**—Dealers in the St. Louis territory report last week as one of the dullest they have experienced for some time, with a decline of 25c a ton on southern iron, with very little activity in malleable, and practically a standstill in basic iron. The quotations on southern basic delivered are $16.50 to $17, and on valley basic, $17.50 to $18. Practically no inquiries of consequence are reported, and no big orders were placed. The market is merely in a waiting condition. Our prices delivered, to which the freight of $3.75 from Birmingham has been added, follow:

| | |
|---|---|
| No. 1 southern | $17.00 to 17.50 |
| No. 2 southern | 16.50 to 17.00 |
| No. 3 southern | 16.00 to 16.50 |
| No. 4 southern | 15.50 to 16.00 |

**Coke.**—The market on coke is practically unchanged, with 72-hour Connellsville foundry bringing from $2.25 to $2.75 for the best selected quality; 48-hour furnace, $1.75 to $2.25, f. o. b. Connellsville ovens; Virginia and West Virginia, $2.25 to $2.75. The freight to East St. Louis and St. Louis is $2.80, and $2.70 when shipment is destined beyond St. Louis.

**Old Material.**—The market is unchanged, unless it is somewhat duller, with quotations as follows:

| | |
|---|---|
| Cast iron borings, free from foreign material, net tons | $ 6.00 |
| Steel axle turnings, gross tons | 12.00 |
| Steel railroad axles, net tons | 17.50 to 18.50 |
| Iron railroad axles, net tons | 19.00 to 20.00 |
| Miscellaneous steel scrap, gross tons | 12.50 to 13.00 |
| Old car wheels, gross tons | 16.00 |
| No. 1 railroad cast scrap, net tons | 12.00 to 12.50 |
| Heavy machinery cast, net tons | 13.00 to 14.00 |
| Stove plate and light cast, net tons | 11.50 |
| Sheet iron, net tons, uncut | 5.00 |
| No. 1 railroad wrought, net tons | 13.00 to 13.50 |
| Railroad malleable, net tons | 12.00 to 12.50 |
| Heavy melting steel, net tons | 13.00 to 13.50 |
| Relaying rails, net tons | 17.00 to 18.00 |

The Andrews & Hitchcock Iron Co. will rebuild No. 1 stack of its Hubbard, O., furnace, but the stack will remain in blast until the improvements are begun in the spring.

## BUFFALO.

### Pig Iron Market Somewhat Depressed —Concession Reported.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, Feb. 9.

**Pig Iron.**—Practically no change is observed this week in market conditions. The tone continues slightly depressed and some selling is reported at prices slightly below quotations. A number of the foundries are running light, but a betterment is shown each week. One of the heaviest jobs in progress in this territory is at the foundry of the Snow Steam Pump Works, where eight castings of 100 tons each are being made for gas engines to be turned over to the United States Steel Corporation. We quote f. o. b. Buffalo as follows:

| | |
|---|---|
| No. 1X foundry | $16.75 to 17.25 |
| No. 2X foundry | 16.25 to 16.75 |
| No. 2, plain | 15.75 to 16.25 |
| No. 3 | 15.50 to 15.75 |
| Malleable Bessemer | 17.00 to 17.50 |
| Gray forge | 15.25 to 15.50 |
| Charcoal | 20.50 to 21.00 |

## NEW YORK.

### Pig Iron Very Dull—Some Good Structural Contracts in Prospect.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., Feb. 9.

**Pig Iron.**—During the past week the local pig iron market has been as dull as at any time since the depression started. Business has been confined to small lots for early delivery, there have been absolutely no sales of importance, several selling interests have shaded prices on quick-shipment product, and in a few instances inquiries have been circulated only to be withdrawn. This last named feature is indicative of strength rather than weakness, as it bears testimony to the surprisingly firm position maintained by the more important producers in regard to prices on advanced delivery. With order books well filled for the first quarter, they are not inclined to press sales and can hold out for a considerable time in the face of continued inactivity. Stocks on furnace yards continue low in this district; in fact, reports from several large interests show that there is absolutely no increase, and the extremely free manner in which iron is being received by consumers is keeping accumulations at the point of production down to insignificant figures. The proportion of active capacity in the district manifests little change; Topton furnace of the Empire Iron & Steel Co. is to blow in early next week, after improvements which will increase its output to some extent. We quote, delivery at New York tidewater during the remainder of the first half, as follows:

| | |
|---|---|
| Northern foundry No. 1 | $17.25 to 17.75 |
| No. 2X foundry | 16.75 to 17.25 |
| No. 2 plain | 16.25 to 16.75 |
| No. 2 southern foundry | 17.25 to 17.75 |
| Malleable | 18.00 to 18.50 |
| Basic | 17.00 to 17.25 |
| Gray forge | 16.25 to 16.75 |

**Ferro-Alloys.**—Both in ferro-manganese and ferro-silicon the market is so quiet that accurate quotations are almost impossible, each transaction creating its own market. Nominally, the current level is $43.00 to $44.00, seaboard, on ferro-manganese and $62.00 to $63.00, Pittsburg, for 50 per cent ferro-silicon, of which there have been a few sales. A Central Pennsylvania steel interest has taken on a considerable lot of ferro-manganese, variously reported at from 500 to 1,000 tons, at $42.00, seaboard, but this transaction was exceptional. An Ohio steel interest bought between 150 and 200 tons a few days earlier, paying a higher figure.

**Finished Materials.**—Looking ahead, the structural trade sees the prospect of considerable local business. Favorable congressional action is expected at this session which will allow the uptown post-office, Thirty-third street and Eighth avenue, to be pushed to completion; this will call for between 7,500 and 9.000 tons of steel. Similarly, it is believed that the municipal office building, requiring 25,000 tons, will be financed and erected during the year. The tonnage involved in building propositions as definite or almost as definite as these runs into a handsome figure; the rapidity with which they arrive at the active stage will depend, of course, largely on the improvement of industrial conditions generally. So far as actual business is concerned, however, current business continues very light. Bids have gone in on the Reade-Duane storage building, 2,300 tons, but no award has been announced. In fact, throughout the country lettings have been small and scarce. A 700-ton viaduct at Joplin, Mo., went to H. W. Klare; a 450-ton office building at Kansas City was taken by the Kansas City Structural Steel Co.; 350 tons for the latest addition to the Boston Elevated went to the Fort Pitt Bridge Works; a 300-ton office building at Scranton for E. H. Davis was secured by the Phoenix Iron Works; Dyler Bros. will supply the steel, 400 tons, for the Douglas Realty building at San Francisco; the Crane Co. warehouse at Chicago was awarded to the Vierling & McDowell Co., 2,540 tons being required; the Fort Pitt Bridge Works took the 1,000 tons of steel needed for the new plant of the West Penn Steel Co.; and numerous smaller orders were closed. Jordon, Marsh & Co. have a 3,500-ton building in prospect at Boston, where the general contract for the John Hancock building, 1,500 tons, has gone to Wells Bros. Awards are pending on the Henry Corn loft building in this city, 3,500 tons; on 2,500 tons of track elevation work for the Pennsylvania Lines West at Chicago; on the Trustees' Security Building of Portland, Ore., 1,500 tons; on the Boston & Albany elevator, 3,000 tons; on 2,500 tons of scattered bridge work for the Grand Trunk; on 1,250 tons for the West Penn hospital at Pittsburg; and on the Bettendorf Axle Co. plant, 1,500 tons. Bids went in today on a bridge and viaduct for the Atlantic Coast Line over the Pee Dee River, 3,000 tons, and some early business is expected from the receivers of the Seaboard Air Line.

No particular activity is manifested in semi-finished materials. Cast iron pipe interests report a considerable call from New England, where the disposition seems to be to take advantage of current low prices. Unusually early buying is resulting in that section. Boston has a letting Friday on 2,200 tons, half of which is 30-inch; Bar Harbor is to buy 500 tons on Feb. 13; Lynn is to open bids Feb. 16 on 750 tons; and several private lettings are in prospect. In this district and to the South, however, there is no activity. We quote: Angles, 2 to 6 inches x ¼-inch and heavier, 1.76c; beams, 3 to 15 inches, 1.76c; tees, 3 x ¼-inch and heavier, 1.81c; plates, carloads, tanks, 1.76c; marine boilers, 2.16c; bar iron, 1.45c to 1.50c; soft steel bars, 1.56; sheets, No. 28, black, 2.66c.

**Old Materials.**—Mills throughout the eastern district are well stocked, and prices are lower on heavy steel, wrought pipe, borings and turnings. Current transactions are small. The situation was complicated during the week by embargoes on the Lukens plant at Coatesville and on the Pennsylvania Steel Co. plant at Harrisburg. Railroad lists for the month were small, as was to be expected. We quote, gross tons, New York delivery, as follows:

| | |
|---|---|
| Old steel rails (re-rolling) | $14.50 to 15.00 |
| Relaying rails | 21.50 to 22.00 |
| Old car wheels | 14.00 to 14.50 |
| Old iron car axles | 19.00 to 20.00 |
| Old steel car axles | 18.50 to 19.00 |
| Heavy melting steel | 13.00 to 13.50 |
| No. 1 railroad wrought | 16.00 to 16.50 |
| Iron track scrap | 14.50 to 15.00 |
| Wrought pipe | 12.00 to 12.50 |
| Cast borings | 8.00 to 8.50 |
| Wrought turnings | 9.50 to 10.00 |
| Heavy cast scrap | 13.50 to 14.00 |
| Railroad malleable | 12.50 to 13.00 |
| Stove plate | 10.00 to 10.50 |
| Grate bars | 10.50 to 11.00 |

**Russian Pig Iron.**—The production of pig iron in Russia amounted to 2,591,342 tons in 1906, compared with 2,658,058 in 1907, while for the first six months of 1908 the production was 1,385,933 tons.

## BIRMINGHAM, ALA.

### Pig Iron Quiet—Receivers for Birmingham Coal & Iron Co.

Feb. 8

The southern pig iron and steel manufacturers are feeling the quiet market as well as in other sections, though it might be stated that there is a steady operation of plants here yet and shipments are somewhat better than the make. This means that there has not been a very great cancellation of hurry orders in making deliveries on orders placed before the new year started in or since then and that stocks of iron on hand in the immediate Birmingham district are being worked down. No. 2 foundry iron is still being held at $13 per ton, publicly quoted, though some sales are said to have been made recently under that price. "The market is quiet but prices are firm" is the way that the conditions are stated by some of the interests in this district. There is a high anticipation, however, that the buying movement will start in before another two weeks have passed away. There is said to be some inquiry for iron but the business that is being transacted is in small quantities.

United States Judge Thomas G. Jones has appointed A. W. Smith, president of the Birmingham Trust & Savings Co., and James Bonnyman, former general manager, as receivers of the Birmingham Coal & Iron Co. The receivers were named upon the presentation of petitions by the Aetna Powder Co., of New Jersey, who claimed an unpaid account of $2,669.48, and other creditors. The petition sets forth the expressed willingness of the company to be adjudged a bankrupt and aver that it is absolutely necessary for the preservation of the said estates that a receiver be appointed because the iron furnaces, two mines and plants represent a large amount of money and, if closed down, would cause a large loss and scatter the skilled labor, so that it would be hard to start up again. The properties of this company are valued at between six and eight million dollars. The same officers of this company are officers of the Atlanta, Birmingham & Atlantic railroad, H. M. Atkinson, of Atlanta, Ga., president. The A., B. & A. railroad went into the hands of receivers a few weeks ago. It is understood that the receivership for the Birmingham Coal & Iron Co. is only a temporary affair. Eighteen men were killed in an explosion in mines of this company Tuesday of

the past week and three men were killed by falling slate in ore mines of the same company, Friday night. The furnaces are located at Vanderbilt, near Birmingham. Coal and ore mines are situated in the various parts of Jefferson county.

## PHILADELPHIA.

### Rail and Car Orders—Pig Iron Dull, But Strength Still Maintained.

Feb. 9.

**Pig Iron.**—The local market during the past week has presented no features other than a continuance of strength in the face of even more complete inactivity than that of the closing weeks of January. There have been absolutely no sales of size, business being confined almost entirely to small lots of foundry grades for early or immediate shipment, indicating that the general foundry melt is holding its own. Furnaces do not appear to be accumulating iron, as stock lists of several large producers at the opening of the month showed little change from the tonnage on hand Jan. 1; this is explained by the extreme conservatism prevailing in regard to the blowing in of additional capacity, and it is to this fact that the very general maintaining of prices in spite of the current lack of business is due. Melters are inclined to wait before contracting far ahead, but producers are also content to let the future take care of itself, as they are well supplied with orders as a rule. There is some slight shading on certain irons, but not on the more attractive grades, although this may come unless business becomes more brisk in the early future. The basic inquiry for 10,000 tons, June and July delivery, has not developed into business and is not likely to for the present, as sellers and the inquirer are at wide variance. There has been no activity in malleable or low phosphorus iron and pipe makers have made no extensive purchases of low grade product. We quote, eastern Pennsylvania delivery, over the remainder of the first half, as follows:

| | |
|---|---|
| No. 1X foundry | $17.50 to 18.00 |
| No. 2X foundry | 17.00 to 17.50 |
| No. 2 plain | 16.50 to 17.00 |
| Standard gray forge | 16.00 to 16.50 |
| Basic | 16.50 to 17.00 |
| Low phosphorus | 21.50 to 21.75 |
| No. 2 Birmingham | 17.75 to 18.25 |
| No. 2X Virginia | 17.50 to 18.00 |
| No. 2 plain Virginia | 17.00 to 17.50 |

**Finished Materials.**—The feature of the week has been the placing of the Baltimore & Ohio rail order, announced Saturday, calling for 37,000 tons of standard sections and a considerable supply of accessories, on all of which early delivery is specified. The order was divided among the Maryland, Cambria, Bethlehem, Carnegie and Illinois steel companies, of which the Illinois Steel Co. received 7,600 tons and the Maryland Steel Co. is understood to have secured 11,000 tons. Considerable activity in car building continues. The American Car & Foundry Co. has received an order for 1,000 steel gondolas for the Lake Shore, and the receivers of the Western Maryland have been authorized to order 300 steel box cars, 550 steel gondolas and five locomotives. The Cambria Steel Co. will supply the plates, about 1,500 tons, for the 500 steel cars recently ordered from the South Baltimore works by the Seaboard Air Line. The shapes will be furnished by the Jones & Laughlin Steel Co.

The general contract for the Union League Club addition, calling for 1,300 tons of steel, went to a local contractor, Jas. G. Doak & Co.; the steel contract has not yet been placed, but will probably go to the American Bridge Co. The Baltimore Ferro-Concrete Co. submitted the lowest bid on the tobacco warehouse project in that city, but no decision has yet been announced. It is also understood that the Cramps have not yet closed for the plates and shapes, 7,000 to 9,000 tons, required for collier work. Both the Carnegie and Jones & Laughlin companies have recently received important orders for plates and shapes for government requirements here and there. The Curtis building is still in abeyance.

The usual run of small contracts on billets is reported, but the situation is extremely quiet. We quote: Structurals, 1.75c to 1.90c; plates, 1.75c to 1.80c; refined bar iron, 1.50c to 1.55c; steel bars, 1.55c.

**Old Materials.**—The market is in much the same condition as a week ago, very little selling being reported. One large melter is reported to have picked up 1,000 tons of heavy steel at $15.50, delivered, but not much is to be had at this level. There is no indication of early improvement, as mills are so poorly supplied with orders that their scrap requirements are likely to continue light for some time. We quote, gross tons delivered at eastern Pennsylvania plants, as follows:

| | |
|---|---|
| Old steel rails (re-rolling) | $17.00 to 17.50 |
| No. 1 steel scrap | 15.50 to 16.00 |
| Old steel axles | 20.00 to 21.00 |
| Old iron axles | 22.50 to 23.00 |
| Old iron rails | 19.50 to 20.00 |
| Old car wheels | 15.50 to 16.60 |
| Choice scrap R. R. No. 1 wrought | 17.00 to 17.50 |
| No. 1 yard scrap | 15.50 to 16.00 |
| Machinery scrap | 15.50 to 16.00 |
| Low phosphorus scrap | 20.00 to 20.50 |
| Wrought iron pipe | 15.00 to 15.50 |
| No. 1 forge fire scrap | 14.50 to 15.00 |
| No. 2 forge fire scrap, ordinary | 10.00 to 10.50 |
| Wrought turnings | 12.50 to 13.00 |
| Axle turnings, heavy | 14.00 to 14.50 |
| Cast borings | 11.00 to 11.50 |
| Stove plates | 12.50 to 13.00 |

## BRITISH IRON MARKET.

### Stocks of Pig Iron Decline—Fairly Hopeful Outlook.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Jan. 30.

The past week in the British iron trade has not been productive of any marked change in the conditions of a week ago. There is no great activity, but a certain degree of strength is given to the market by a fairly hopeful outlook for the future. A very encouraging sign is the rapid rate at which the stocks at Middlesbrough are declining. For some time these stocks have continued to rise, but latterly there has been a falling off, and the figures for the past week are very significant. Connal's stores at Middlesbrough yesterday stood at 100,138 tons, showing a decrease of 52,537 tons on the week. Recent shipments have been poor. Another hopeful sign is the fact that buyers in the Cleveland district are prepared to pay more for deliveries of from one to three months ahead than for prompt delivery, the difference in price usually being from 7d to 8d in favor of the seller. Thus yesterday's quotation was 48s 4½d ($11.85), for prompt delivery of No. 3 Cleveland; one month quotations were fixed at 48s 9d ($11.94) with two months 49s ($12). In the hematite department, conditions are quiet. Business in this department has been quiet since Christmas, with only an odd order here and there, and these mostly for small quantities. Stocks of West Coast now total 7,035, showing a decrease of 905 tons on the week. On the Midland market on Thursday, the tone may be said to have been on the whole fairly optimistic. There, as at Middlesbrough, the outlook is considered hopeful. General surprise was expressed at the result of the northern wages board return, which shows an increase in the selling price from £6-12-3d for the October return, to £6-13-5d for the two months ending December. This increase carries with it a wages advance, and Midland iron masters are eagerly awaiting the Midland wages board return, due in a few days, to see whether anything of a similar nature has occurred in the Midland district. A

rise in wages there would be very undesirable, and would complicate the position of local ironmasters, who are already handicapped by dear raw material and the low prices of finished products. The general opinion, however, would seem to be that the return is far more likely to show a reduction, considering the trend of prices at the close of the old year.

## GERMAN MARKET.

**Improvement Has Slackened and Trade is Very Dull.**

Dusseldorf, Jan. 28.—The slight improvement of the situation, which appeared about the middle of December, has halted. With the exception of wire products, the whole market has become flat again. In pig iron, prices are unchanged and nominal; no business is going. The exact quantity of pig iron, unsold, in stock on Jan. 1, was 560,000 tons. Buyers are covered quite fully as far as July 1, and even further, whilst producers keep the production as small as possible. In coke, the demand is again decreasing, whilst stocks are so large that it is impossible to estimate the quantity. The coal market also is very dull and mines have to stop work during some days every week. In railway material, orders are more scarce than before and quite insufficient also in half-finished products. The export in the latter two products is growing at reduced prices. In plates and sheets, nothing is bought for inland, but the whole business therein is for export. Bar iron of good commercial quality was firmer about a fortnight ago by about 5 marks per 1,000 kilograms and is now 95 marks ($22.60) against 90 marks ($21.40) per 1,000 kilograms f. o. b. Rotterdam or Antwerp. It has slackened off again. The market is better in wire products owing to the international arrangements between the producers; also in light tubes the demand is increasing. The market for old material is very firm, but buyers keep back, and a weakness in prices is expected for the next few weeks.

The whole situation of trade is kept under pressure by the constant political troubles in the near east, and in the inland, by the growing demand for money from all parties, towns, provinces, and industrial concerns, and by unavoidable and heavy new duties. A good deal of the stagnation is also due to the unfavorable season, as the shipping trade is closed on the rivers and canals on account of ice.

# METAL MARKET

## ST. LOUIS.

Feb. 8.

**Lead and Zinc.**—The decision of the United States court of appeals admitting calamine free of duty is alleged as a cause for another decline in zinc ore prices in the Missouri-Kansas-Oklahoma district last week. The highest price reported was $40.50 for 62½ per cent ore, with 60 per cent ore selling at $38 a ton early in the week and slumping off to $36 toward the close. Operators fairly flooded purchasers with offers after Wednesday. It is believed that the decline will cause a number of plants to shut down, and that other operators who were to have resumed work within a short time will remain closed.

Somewhat similar conditions existed in the lead ore market. A price of $52 early in the week was reduced to $50 at the close. One sale of 1,000,000 pounds of lead was reported at $52 a ton at Webb City. Big surpluses in bins is still retained in some parts of the district.

Silicate and calamine sold on a $19 basis, while some of the higher grades brought $30 a ton.

There was also a big decline reported in the metal markets of New York and St. Louis. Spelter was quoted at $4.95 at St. Louis; New York spelter at $5.02½; St. Louis lead at $4, and New York lead at $4.10.

## NEW YORK.

Feb. 9.

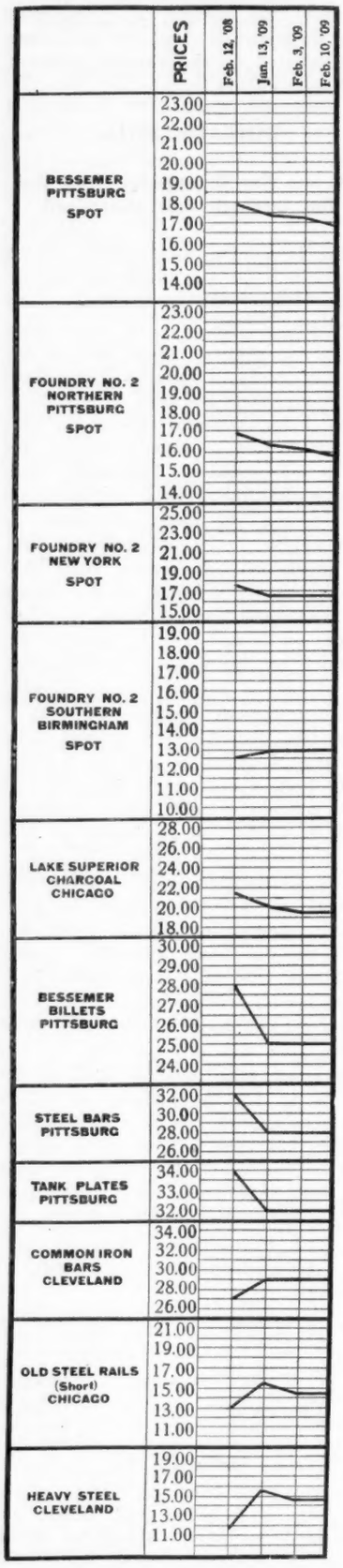
**Copper.**—Recent reductions in price have not had the effect of stimulating purchasing to any appreciable extent, and the market is again lower and weak, principally because of the influence of the considerable amount of speculative copper being carried both at home and abroad. Lake sellers are not so eager to realize, and this line is relatively stronger than electrolytic. We quote: Lake, 13⅝c to 13¾c; electrolytic, 13⅜c to 13⅝c; castings, 13c to 13¼c.

**Pig Tin.**—The metal has more than held its own during the week, as the low prices reached early in the month brought out a moderate amount of business. There is a limited volume of selling at a level of from 27¾c to 28c, New York.

**Pig Lead.**—Heavy pressure to sell has sent the price down rapidly, and the situation is in a thoroughly lifeless state. The current quotation is 4.02½c to 4.07½c.

**Spelter.**—The decline in Joplin ore prices has released considerable metal

PRICE CHART.



for sale, but this has not been taken up eagerly, owing to the more quiet state of the galvanizing trade, and prices are somewhat lower. We quote, 4.95c to 5c, New York.

**Antimony.**—Cookson's and Hallett's are quoted at 8c to 8¼c; ordinary brands at 7½c to 7¾c. The market is quiet.

## CHICAGO.

Feb. 9.

A stronger tone prevails with regard to copper metal. The past week witnessed a number of important sales. A weakness has developed in lead and the price is off $1 a ton, affecting spelter also. We quote as follows:

Lake copper, carload lots, 14¼c to 14½c; castings, carload lots, 13¾c; pig tin, 30c; spelter, 5.10c to 5.15c; pig lead, desilverized, 4.20c to 4.25c in 50-ton lots; corroding, 4.65c to 4.70c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle in car lots of 600-pound flasks; Cookson's antimony, 10½c to 11c; other grades, 10c.

Prices of copper, brass, lead and tin scrap are generally lower and trading is very light. We quote buying prices as follows:

Copper wire, 12¼c; heavy copper, 12c; light copper, 11c; heavy red brass, 11⅛c; heavy yellow brass, 8¼c; light brass, 6¼c; No. 1 red brass borings, 8¾c; No. 1 yellow brass borings, 7¾c; brass clippings, 8¼c; tea lead, 3c; lead scrap, 3.40c; zinc, 3.25c; tin pipe, 23½c; tin foil, 21.50c; pewter, 16½c; electrotype plates, free from wood, 3.90c; electrotype dross, 2¾c; stereotype plates, 4¼c; stereotype dross, 2.90c; prime slab zinc dross, $50 per ton.

## BLAST FURNACE ACCIDENTS.

Two men were killed by an explosion at the plant of the St. Louis Blast Furnace Co., St. Louis, Feb. 8. The damage to the plant was very slight.

An employe of the Cleveland Furnace Co., Cleveland, was overcome by gas on the casting house of the plant Feb. 7, and efforts to revive him were futile. Five men who attemped to rescue him were temporarily prostrated.

**Chicago Pneumatic Tool Report.**—The annual report of the Chicago Pneumatic Tool Co., for the year ending Dec. 31 has just been issued showing a total profit for the year of $289,625. Deductions for depreciation interest, etc., from this leaves $21,573 to be carried to the surplus account, which now amounts to $821,654.

## TALKED WITH PREMIER.

### Robert Fleming Says New Corporation Wants Assured Markets.

Toronto, Can., Feb. 6.—Robert Fleming, of London, Eng., head of the British syndicate which has acquired a controlling interest in the Lake Superior Corporation, and W. K. Whigham, a director of the reorganized company, were in Toronto recently and had an interview with Premier Sir James Whitney and other members of the provincial government. It is understood that the main object of their visit was to arrange for a meeting between Col. A. Matheson, provincial treasurer, and the British capitalists now interested in the enterprise, which may result in important developments. Mr. Fleming stated that details of the proposed expansion had not yet been arranged. The first consideration was to secure an adequate market for their products and representatives of the company were now engaged in looking up prospective business, both on this continent and elsewhere. When a market was assured there would be no hesitancy in expansion. He indicated the line that they would probably take, an essential need to the economical management of the steel works being increased furnace capacity. A drawback to operations in the past was that the furnaces could only supply half the pig iron needed to keep the rail mill going to full capacity. This would need be remedied so that they would not require to buy pig iron. The erection of structural steel works and other subsidiary enterprises was also in contemplation. Steel rails would, however, continue to be the foremost product. Mr. Fleming said that Sir William Van Horne regarded the steel rails made at Sault Ste. Marie as the finest in the world, and that the Canadian Pacific was anxious to secure the success of the enterprise. Mr. Whigham has gone to Sault Ste. Marie to manage affairs there, Mr. Fleming returning to England to report to his associates.

## LAUNCHING OF THE DINKEY.

The steamship Alva C. Dinkey, built by the American Ship Building Co. for the Pittsburg Steamship Co., and named in honor of the president of the Carnegie Steel Co., was launched at the Lorain plant of the ship building company, at noon Saturday, Feb. 6. Leonora, the five-year-old daughter of Mr. and Mrs. Dinkey, acted as sponsor. After the launching, which was successful every way, and was viewed by several thousand people, the guests of the American Ship Building Co., returned to the Hollenden Hotel, Cleveland, where luncheon was served. President Coulby, of the Pittsburg Steamship Co., acted as toastmaster.

Happy addresses were made by J. C. Wallace, president of the American Ship Building Co., Mr. Dinkey, W. G. Pollock, I. M. Jenks, W. P. Palmer, president of the American Steel & Wire Co., and H. A. Kelley. The big freighter is 600 feet over all, and will have a capacity for carrying about 12,000 tons of iron ore. The steamer E. J. Buffington, sister ship of the Dinkey, which is also building at Lorain, will be launched in about three weeks. With these two boats the Pittsburg Steamship Co. will have 10 steamers of the 600-foot class.

Negotiations are under way for the sale of the Platt Iron Works of Dayton, O., to Cincinnati and eastern capitalists. The deal is being conducted by George D. Crabbs, president of the Phillip Carey Mfg. Co., of Cincinnati, and associates. The Dayton concern is a large manufacturer of pumps, water wheels, hydraulic machinery, etc. It is expected that the sale will be consummated within 30 days. Positive denial is made that the International Steam Pump Co. is connected with the deal.

The Carnegie Steel Co. made the first steel in its second block of six new open-hearth furnaces at the Duquesne works, Duquesne, Pa., Feb. 5. One furnace was put in successful operation and is now running. The six furnaces are a part of the eighteen furnaces which have been under construction at this works for some time. The first six of the furnaces were completed and put in operation recently and the final block of six is building. The furnaces are all of the 50 ton type.

S. & C. Wardlow, manufacturers of special steel at Sheffield, Eng., have purchased a five-story building at 278 Pearl Street, New York City, and will occupy it with their American office and warehouse as soon as alterations are completed. The site which they are leaving, 95 John Street, has served them for this purpose for 34 years. Henry Woodcock is manager.

Stockholders of the Youngstown Sheet & Tube Co., were called together Feb. 10, to take action on the proposition to increase the capital stock $10,000.

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## SPREADS IN STEEL PRICES.

Changing conditions in the iron and steel trade during the past two decades are strikingly illustrated by comparisons of the price spreads between pig iron and billets on the one hand and billets and finished material on the other. Before the successive manufacturing operations were brought largely under individual ownerships, the spreads were much larger than they have been of late, and this is true not only in point of actual spread, measured by dollars and cents, but also in point of percentage spread. Thus at present, with billets at $25, Pittsburg, and tank plate at 1.60c, Pittsburg, the spread between a gross ton of billets and a net ton of plates is $7, and 1.28 gross tons of billets are equal in value to one net ton of plates. In June, 1890, billets were $30.50 and plates 2.75c, there being a spread of $25.50, while 1.80 gross tons of billets were worth much as one net ton of plates.

In order to make a striking comparison, certain periods are selected. In a strong year, the highest prices are generally found towards the month of June. In a uniformly bad year, the lowest prices were invariably developed in July and August. It is impracticable to go farther back than 1890, for comparison with the present, because iron was then the factor rather than steel, and as 1890 was the banner year for production until 1895, and June the best month of the year, the comparison starts with average prices in June, 1890. Inasmuch as 1892 was the last good year prior to the depression, June of that year is taken for the second basis. On an average, the summer of 1897 developed the lowest prices in American iron and steel history, and average prices in July and August of that year are taken for the third comparison. The market was utterly irresponsible in the boom year 1899, so it may well be skipped altogether, and we pass to the more moderate boom year 1902, taking prices in June of that year, for moderately prompt delivery. Then we take June, 1907, as typical of the last of the high pressure period, with practically the highest prices of the year in billets and pig iron, and finally there are taken the opening prices of the present year. The "Bessemer average," where available, is taken for pig iron, billets are for ordinary lots, early delivery, and finished steel prices are the official or regular prices, except when there were premiums for quick delivery, in which case prices for moderate sized lots and fairly prompt delivery are taken. Prices are all at Pittsburg. The prices are given in the table below, it being understood that the prices are for the crucial periods mentioned in the years named:

| | Bessemer pig iron. | Bes'mer billets. | Tank plate. | B'ms |
|---|---|---|---|---|
| 1890 | $19.00 | $30.50 | 2.75c | 3.10c |
| 1892 | 14.10 | 22.50 | 1.90 | 2.00 |
| 1897 | 9.25 | 14.00 | 1.00 | 1.00 |
| 1902 | 21.00 | 33.00 | 1.85 | 2.20 |
| 1907 | 24.15 | 30.00 | 1.70 | 1.70 |
| 1908 | 17.40 | 25.00 | 1.60 | 1.60 |

The 1890 quotation on beams is on iron, steel not having become the market leader then. The spreads between Bessemer pig iron and Bessemer billets, both at Pittsburg, have been as follows at the times under review: 1890, $11.50; 1892, $8.40; 1897, $4.75; 1902, $12; 1907, $5.85; 1908, $7.60.

Under special conditions, different spreads from these have been shown. Thus conversion contracts have been made at as low as $4, and the citation of market quotations given above at the time of cheapest pig iron shows a larger spread because at a later time pig iron was higher without billets being correspondingly higher. Again, the spread at the beginning of this year, taking the average of all consuming points, was less than at Pittsburg, for the reason that delivered prices on billets concede a portion of the freight, while this is not the case with pig iron. In the valleys, on the other hand, the spread is practically $9, on account of the difference in location operating to lower pig iron and advance billets, so that the spread shown in the table is fairly indicative.

For a comparison extending over so long a period, it is not convenient to take many finished products, so plates and beams alone are selected. Even in the case of beams, it was necessary, as noted, to take iron beams for 1890 instead of steel beams. The spread between a gross ton of Bessemer billets and a net ton of plates and of beams respectively has been as follows:

**Spread Between Billets and Plates and Beams.**

| | Plates. | Beams |
|---|---|---|
| 1890 | $24.50 | $31.50 |
| 1892 | 15.50 | 17.50 |
| 1897 | 6.00 | 6.00 |
| 1902 | 4.00 | 11.00 |
| 1907 | 4.00 | 4.00 |
| 1908 | 7.00 | 7.00 |

The comparison shows some striking movements. In the first place, in 1890 and 1892 rolling equipment and methods were in a comparatively crude state and the operation was expensive. Labor was a very large item, whereas now the labor at the plate or structural mill is almost a negligible item, compared with the cost of steel and of fuel. It is not surprising that production was relatively small. It is to be noted, too, that iron beams in 1890 cost much more than steel plates. The operation of beam rolling was very expensive, on account of the high la-

bor cost and the large amount of scrap produced. Even as it was, the iron beams produced were not nearly as effective as steel beams. There was much more material near the neutral axis, it being necessary to roll the web much thicker with iron than with steel.

In 1897 the manufacturers had to get down to fundamental principles and sell the material as cheaply, except in the case of the leaders, as it could be made, and the spread was only $6 in the case of both plates and beams. This, of course, is the spread between a gross ton of billets and a net ton of plates or beams, so that the scrap loss is taken care of.

In 1902, the market exhibited the vagaries usually attendant on a period of intense activity. There was a heavy demand for everything, but on account of demand for various miscellaneous products, made by smaller mills buying billets, there was an exceptionally heavy demand for billets, producing a high price. The plate market kept within bounds, so that the demand was supplied by mills making steel themselves, and the spread (in June) was only $4, not enough to pay costs, but it was not necessary that plates should be rolled from purchased steel. For structural material, on the other hand, there was a particularly heavy demand, and ordinary lots for nearby delivery brought heavy premiums, making a spread of $11, nearly three times that between billets and plates.

In 1907 there was a heavy demand for billets again, for miscellaneous purposes, and the market was high, Plates and shapes were kept within bounds, the manufacturers exercising a moderation in quoting prices which, on account of the new alignment of trade, they did not consider it necessary to observe with billets.

The spread at present is $7, which is in line with the cost of manufacture at self-contained works. On suitable orders this spread might show a profit to a plate mill buying steel, but would hardly do so in the case of a structural mill. The spread between pig iron and plates and beams is $14.60, against $10.75 in July and August, 1897, or about the same in point of percentage.

## UTILIZATION OF SLAG.

Editor IRON TRADE REVIEW:

Lately we have read in our newspapers that pavement made out of slag is a monopoly and that none is made in this country. If such is the fact, it may possibly be of interest to the public to know what I wrote in my report of glass and glassware at the Paris Exposition of 1878:

Although the manufacture of glass from the slag of blast furnaces may not be considered strictly as a branch of the glass manufacture, yet I have thought that a few remarks upon the subject might draw the attention of our iron and glass manufacturers, and might, perhaps, result in establishing this new branch of manufacture, which is already carried on so successfully in Europe.

In the manufacture of iron with blast furnaces, there is formed more or less of a dark-colored glass known as slag or scoria. This refuse matter accumulates around furnaces, and must be carried away in order to get rid of it. It is almost as great a nuisance as the coal dust of our anthracite coal mines.

Within three or four years, the manufacture of articles made from slag has been carried on successfully in England in the iron districts. In the Cleveland district alone, from three to four millions of tons of slag are made annually. Bricks, paving stones and slabs, concrete panels, tiles, etc., are now made from this material. I believe it capable of being introduced as a building material in many ways, and that ready means for its application would soon be discovered should its manufacture be carried on in this country. In England we read of an iron manufacturer offering to furnish to any glass-maker who wishes to establish glass works in his neighborhood 3,000,000 tons of slag for nothing. Doubtless there would be plenty of our iron-makers who would show as much generosity to any one wishing to embark in this business.

Slag-glass, in its natural state, is too dark to be applied to the purposes for which ordinary white glass is used, but it can readily be made useful in all articles of cheap and ordinary use where slightly colored glass is not objectionable. As a competitor against ordinary glass, slag-glass has a great advantage in its low price, since the larger part of its ingredients could be had for nothing.

In connection with blast furnaces, it would be an easy matter to erect glass works, and, by proper arrangements, to transfer the hot slag into glass furnaces, and thereby retain a large part of the heat already developed. Should the slag not contain a sufficient quantity of silica, an additional amount of sand might be added. Should it be too silicious, and thereby produce a too hard and brittle glass, the required quantity of sulphate of soda might be added to produce a glass of the ordinary conditions. The installation of the furnaces might be so arranged as to utilize some of the waste gases of the blast furnaces. The furnaces could be built without pots, and tank furnaces, similar to those used in the iron manufacture, might be used with slight modifications, or furnaces in the style of Siemens' continuous melting plan. With the exception of the color, this glass could be produced in all degrees of hardness and softness suitable for different purposes. For the terra cotta articles now so extensively used in Europe, those made with slag-glass could be substituted, and so made and ornamented as to be a vastly cheaper substitute.

With the immense interest we have in blast furnaces, some one should certainly try to develop this industry. The material is in abundance and in fact is a nuisance to manufacturers of pig iron. It is a truism which needs no argument to prove it that today the most successful enterprises are those that utilize what is considered as a waste.

CHAS. COLNE.

11 Broadway, New York.

## AN APPEAL TO FRIENDS OF THE LATE BENNETT H. BROUGH.

The appeal on behalf of the relatives of the late Bennett H. Brough, secretary of the Iron and Steel Institute, London (Eng.), has been fairly successful. It will be remembered that, following his death, an effort was made to establish a fund sufficient to maintain his widow and two children, who were left practically without resources. The total in view was £5,500, which, if invested, would yield an annuity of £200 a year. Towards this sum, the promises received up to the present amount to about £5,000, and an appeal is about to be issued for the remainder. The two children are Peter Brough, aged 13, and Nancy, 11 years old, and it is considered that the annuity should be payable for at least ten years, by which time the children will be able to earn their own living. The contributors, so far, have not included many Americans; and in view of the fact that Mr. Brough was so well known and esteemed on the American continent, it is hoped that further gifts to the fund may be forthcoming. They may be paid to the secretary, Iron and Steel Institute, 28 Victoria street, London, S. W.

## NEW MASSILLON BRIDGE COMPANY ORGANIZES.

The Massillon Bridge & Structural Co., recently incorporated with a capital stock of $250,000, has purchased the bridge plant at Massillon, O., and will manufacture bridges and steel structures of all classes. The official staff of the company is as follows: President, H. A. Croxton; vice president and general manager, C. S. Davis; chief engineer, Miles C. Bland; secretary and treasurer, E. Rice; assistant secretary and treasurer, C. D. Yost; superintendent of shops, Robert M. Reay; superintendent of erection, Robert Sweed.

Mr. Croxton is president of the Massillon Iron & Steel Co., and is identified with other manufacturing industries at Massillon. Mr. Davis was 12 years chief engineer of the Massillon Bridge Co., and three years chief engineer of the Toledo-Massillon Bridge Co. Mr. Bland was contracting manager for the American Bridge Co. at Cleveland four years, and contracting engineer for the Pittsburg Steel Construction Co. for one year. Mr. Rice was plant engineer for the Massillon Bridge Co. for 12 years, and plant engineer for the Toledo-Massillon Bridge Co. three years. Mr. Reay has been superintendent of the plant at Massillon for 30 years. Mr. Sweed had charge of the erection work for the Massillon Bridge Co. 26 years, and for the Toledo-Massillon Bridge Co. three years.

## NEW BUILDINGS IN SAN FRANCISCO.

(Special Correspondence.)

San Francisco, Feb. 5.—Dyer Bros., of San Francisco, have been awarded the contract for the fabricated steel required for the Young Men's Christian Association building to be erected in this city. The contract calls for 1,660 tons of structural steel, at a cost of approximately $100,000, and is the largest contract for structural steel ever awarded to a San Francisco fabricating company. The bid was about $4,000 lower than the next lowest competitor, an eastern manufacturer. The specifications are based on the general use of the new Bethlehem sections.

The Marquis hotel building is to be constructed as rapidly as possible. The contract for 500 tons of structural steel was awarded to the American Bridge Co. yesterday. The hotel is to be an 8-story, class A building, with a highly ornamental exterior.

The receivers of the Milliken Brothers, of New York, have taken the contract for 650 tons of cast iron for the warehouse of the Crane Co., in San Francisco. The castings consisting of columns and bases will be purchased in San Francisco.

The Milliken Brothers have also secured the contract for 175 tons of structural iron for the new building which George Hamlin Fitch will erect on his site, Main and Mission streets. Fitch is the news editor of the San Francisco *Chronicle*. He has built the Hotel Hamlin since the great fire, a large and fashionable hostelry, and will invest an additional $100,000 in the new business structure.

The Union Iron Works Co., one of the Schwab plants, is also engaged in the fabrication of structural sections required for buildings, bridges and other structures, and is now equipped for that class of work.

Business in San Francisco has been improving lately, and a good amount is being offered, and much more is in sight.

From the manufacturers' standpoint the prevailing prices are unsatisfactory, and the competition very keen. Considerable foreign material has arrived here recently, and much more is afloat for this port.

Among the desirable jobs looked for in the immediate future are the Scottish Rites Temple, with 1,200 tons, and the two piers for the state harbor commission, with an aggregate of 1,500 tons.

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*Metal Statistics*, a little volume issued annually by the American Metal Market, New York city, this year contains the usual statistics concerning copper, tin, lead, and other metals, and also a new section of 31 pages giving valuable statistics concerning iron and steel products. A feature is a page devoted to Luty's index steel prices, an invention of the well known Pittsburg correspondent. The total production of various products to date is another new feature. The Bessemer pig iron average, compiled by the Carnegie Steel Co., and later by W. P. Snyder, appears for the first time for the earlier years. Other pages relate to the production of finished rolled iron and steel, bar iron prices, wire nail cards, nail production, sheet prices, tin plate prices and fluctuations in can prices.

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The directors were re-elected at the recent annual meeting of the American Can Co., E. C. Converse being chosen a member of the board to succeed W. L. Dutton, resigned. The officers were re-elected.

## PLANS FOR FOUNDRYMEN'S CONVENTION.

A joint meeting of the Cincinnati entertainment committee and representatives of the American Foundrymen's Association, the Foundry and Manufacturers' Supply Association, the Foundry Foremen's Association, and the Brass Founders' Association, was held in Cincinnati on Feb. 6 to discuss plans for taking care of the annual convention of these bodies which will be in that city in the week of May 17. It was suggested that Tuesday evening and Thursday afternoon and evening be given over to pleasure. The plan under consideration is to hold a "Get Acquainted Night" on Tuesday evening, and on Thursday afternoon a barbecue at Coney Island, with some form of evening entertainment not yet decided upon.

The Associated Foundry Foremen's Association selected the Grand Hotel as official headquarters during the convention.

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**New President Chosen.**—At the annual meeting of the Engineers' Society of Western Pennsylvania, held at Pittsburg, Geo. T. Barnsley, road engineer of Allegheny county, was elected president for the ensuing year. The other officers chosen were Walther Riddle, vice president and A. E. Frost, treasurer. S. A. Taylor and J. N. Chester were added to the board of directors. In assuming his office, Mr. Barnsley gave a felicitous address on the work of the society and announced his determination to exert his efforts toward broadening the scope of usefulness of the body. J. K. Lyons, the retiring president, also spoke upon many of the more important recent achievements in the engineering world with special reference to work in the Pittsburg district. The engineers' society is now making arrangements for its annual banquet which will take place some time during February.

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Application for a charter for the Pittsburg Steel Products Co., Pittsburg, has been made by Wallace Kowe, president of the Pittsburg Steel Co., and associates of that company. No authorized statement of the purposes of the company has been issued.

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The United States Iron & Steel Co. has filed at Duluth an amendment changing its name to the Pittsburg Iron & Steel Co.

# Slight Increase in Pig Iron Production.

Our completed blast furnace returns for December show a slightly better production than was anticipated by the incomplete returns published last week, in which it was indicated that the January production would about equal that of December. The complete figures show the total production of coke and anthracite pig iron to be 1,787,473 tons, divided between 646,588 tons of merchant iron and 1,125,541 tons of non-merchant iron, and 15,344 tons of spiegel and ferro. This is an increase of 63,809 tons over December, or 3.7 per cent. The steel making iron production increased 24,257 tons, or 2.2 per cent, while the increase in merchant iron was 32,291 tons, an increase of 5.2 per cent. The average daily production was 57,654 tons, an increase over December of 2,052 tons. While the production this month has increased over that of December, a sharp check has been administered to the almost steady improvement which has obtained since last June. The increase of December over November was 8.8 per cent, while this month it falls to less than 4 per cent. The production by months is shown in the accompanying table:

| | 1909. | 1908. | 1907. |
|---|---|---|---|
| January | 1,787,473 | 1,043,374 | 2,194,801 |
| February | | 1,086,809 | 2,047,036 |
| March | | 1,229,856 | 2,216,709 |
| April | | 1,155,122 | 2,226,708 |
| May | | 1,168,002 | 2,291,030 |
| June | | 1,106,300 | 2,237,420 |
| July | | 1,228,604 | 2,253,243 |
| August | | 1,366,019 | 2,243,656 |
| September | | 1,416,252 | 2,174,148 |
| October | | 1,573,824 | 2,359,690 |
| November | | 1,582,314 | 1,820,558 |
| December | | 1,723,664 | 1,234,733 |
| Total | 1,787,473 | 15,680,140 | 25,299,732 |

The daily capacity in blast on the last day of the month was 59,443 tons, an increase over the capacity in blast on the last day of December of 6,282 tons.

Two important states showed sharp decreases in their production, in each case the decrease being due to diminished production of steel making iron. New York's production dropped 9,068 tons, or 6.7 per cent. This was entirely due to steel making iron falling off 9,340 tons, there being a slight increase in the merchant production. Illinois showed a decrease of 6.5 per cent, divided among 11,150 tons of steel making iron and 1,806 tons of merchant iron, a total of 12,956 tons. The other states all show increases of greater or less magnitude. Pennsylvania's production increased 3.4 per cent, or 25,546 tons divided, approximately, 15,500 tons merchant iron and 10,000 tons steel making iron. Ohio showed the very slight increase of 1.5 per cent, or 5,226 tons. The steel making iron in this state also fell off, there being a decrease of, approximately, 1,000 tons, with a corresponding increase in merchant iron of 6,000 tons. In Alabama, the conditions were reversed, there being a decrease of over 1,600 tons of merchant iron with an increase in the production of steel making iron of 3,224 tons. The total increase in Alabama was 1,601 tons, or 1.2 per cent. Virginia increased its very small production by 7,746 tons, or 35 per cent. This was all merchant iron. New Jersey increased its merchant production 2,464 tons, or 13 per cent. The Tennessee group showed a very healthy increase of 10,762 tons, or 23 per cent. Of this, 928 tons were merchant iron and 8,834 tons steel making iron. The Maryland group also improved strongly, there being an increase of 23,914 tons, equal to 33.7 per cent. Of this increase 23,488 tons were steel making iron. The Georgia group increased its production 1,260 tons, or 4 per cent, all of which was merchant iron.

The number of stacks in the country has been increased by three, by the addition of Gary No. 9 in Indiana and the two new stacks of the Ohio works of the Carnegie Steel Co. at Youngstown. The total number is now 406. There were 13 more stacks in blast on Jan. 31 than on Dec. 31. Of these, eight were in Pennsylvania, one in Virginia, one in Illinois, one in West Virginia and two in Indiana. The number of stacks in blast in the remaining states was the same as in December. The percentage of active capacity in blast on the last day of January was 56.3, compared to 55.6 in December. The following table shows the average daily production of the various months of last year, compared with that of January:

| | 1909. | 1908. |
|---|---|---|
| January | 57,654 | 34,316 |
| February | ..... | 37,476 |
| March | ..... | 39,672 |
| April | ..... | 38,504 |
| May | ..... | 37,677 |
| June | ..... | 36,876 |
| July | ..... | 39,632 |
| August | ..... | 44,065 |
| September | ..... | 47,208 |
| October | ..... | 50,764 |
| November | ..... | 52,744 |
| December | ..... | 55,602 |

Corporation activities are up to 60.5 per cent, in point of blast furnace capacity operating. This assumes that at the Gary plant four stacks are in shape for operation. During the month, two stacks at South Chicago, 4 and E, have been blown in, and one, No. 9, has blown out. No. 2, at Newburg, has also been blown in, but about the first of March, No. 5, which is ailing, will be blown out. Despite this increase in active capacity, Corporation pig iron stocks show no increase.

## JANUARY FURNACE REPORT.

| STATES— | NO. OF STACKS. | NO. IN BLAST ON LAST DAY OF MONTH. JAN. | NO. IN BLAST ON LAST DAY OF MONTH. DEC. | PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE. | AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH. | ACTUAL TONNAGE MAKE. MERCHANT. | ACTUAL TONNAGE MAKE. NON-MERCHANT. | TOTALS. JAN. | TOTALS. DEC. |
|---|---|---|---|---|---|---|---|---|---|
| Pennsylvania | 153 | 96 | 88 | 61.2 | 25,507.2 | 178,621 | 583,690 | 762,311 | 736,765 |
| Ohio | 66 | 39 | 39 | 57.3 | 12,195.3 | 135,075 | 229,387 | 364,462 | 359,236 |
| Alabama | 46 | 23 | 23 | 50.9 | 4,694.3 | 118,179 | 30,225 | 148,404 | 146,803 |
| Virginia | 24 | 11 | 10 | 43.9 | 1,010.9 | 30,080 | ——— | 30,080 | 22,234 |
| New York | 25 | 15 | 15 | 57.4 | 4,248.0 | 63,552 | 62,508 | 126,060 | 135,128 |
| New Jersey | 9 | 3 | 3 | 33.3 | 681.9 | 21,144 | ——— | 21,144 | 18,680 |
| Illinois | 25 | 15 | 14 | 55.4 | 5,088.0 | 15,735 | 126,771 | 142,506 | 155,462 |
| Tennessee | 18 | 11 | 11 | | | | | | |
| West Virginia | 4 | 2 | 1 | 51.4 | 1,906.5 | 41,803 | 16,234 | 58,037 | 47,275 |
| Kentucky | 7 | 2 | 2 | | | | | | |
| Maryland | 4 | 2 | 2 | | | | | | |
| Wisconsin | 6 | 3 | 3 | 55.1 | 3,310.8 | 17,644 | 76,726 | 94,370 | 70,456 |
| Colorado | 6 | 3 | 3 | | | | | | |
| Indiana | 4 | 4 | 2 | | | | | | |
| Georgia | 2 | 1 | 1 | | | | | | |
| Texas | 3 | 0 | 0 | | | | | | |
| Minnesota | 1 | 1 | 1 | 55.5 | 800.0 | 24,755 | ——— | 24,755 | 23,495 |
| Michigan | 2 | 2 | 2 | | | | | | |
| Missouri | 1 | 1 | 1 | | | | | | |
| Spiegel—All states | | | | | | | | 3,272 | 3,096 |
| Ferro—All states | | | | | | | | 12,072 | 5,034 |
| Total | 406 | 234 | 221 | 56.3 | 59,442.9 | 646,588 | 1,125,541 | 1,787,473 | 1,723,664 |

## PERSONALS.

J. J. Keefe has been engaged by the Independent Pneumatic Tool Co. as salesman, and will travel out of the Chicago office.

H. F. De Bardeleben Jr. has resigned as manager of the Woodstock Iron Co., Anniston, Ala., and with his father, H. F. De Bardeleben, is engaged in developing coal mines and recently purchased ore properties in Alabama.

J. H. Means, assistant general manager of the Colorado Fuel & Iron Co.'s Minnequa works, Pueblo, Colo., has resigned, to take effect March 1. Mr. Means will become identified with the Northwestern Iron Co., Mayville, Wis.

Owing to ill health, John W Dunn has resigned as president of the International Steam Pump Co. and has been succeeded by Benjamin Guggenheim, for several years chairman of the executive committee.

K. M. Zorn has been engaged by the Youngstown Car Mfg. Co., Youngstown, O., builders of industrial cars, as consulting engineer and salesman, with offices at 120 Noble road, East Cleveland, O.

Julius Bieler has resigned as treasurer of the Crucible Steel Co. of America, to devote his exclusive attention to his duties as president of the Third National Bank of Pittsburg. G. A. Turville has been named as his successor.

Theo. A. Gessler has assumed his duties as district manager of sales of the American Sheet & Tin Plate Co., at New York, succeeding Frank Dickerson, and E. E. Winkler has become assistant manager of sales of that office. The changes were effective Feb. 1.

C. J. Atkinson, designer of the Atkinson gas producer, which has been manufactured by the Industrial Gas Power Co., has severed his connection with the company, and is now with the Domfeld-Kunert Co., Watertown, Wis., which is building under his management an improved form of his gas producer.

B. A. Wallingford Jr., has resigned as vice president of the United Iron & Steel Co., Pittsburg, to devote his exclusive attention to the business of his own firm, Walter-Wallingford & Co. He will continue to reside in Pittsburg and will give his principal attention to the Pittsburg and Cleveland end of that firm's business. Mr. Wallingford remains a director of the United Iron & Steel Co., and Walter-Wallingford & Co. will continue to represent the United Iron & Steel Co. as agents for the sale of the latter's pig iron.

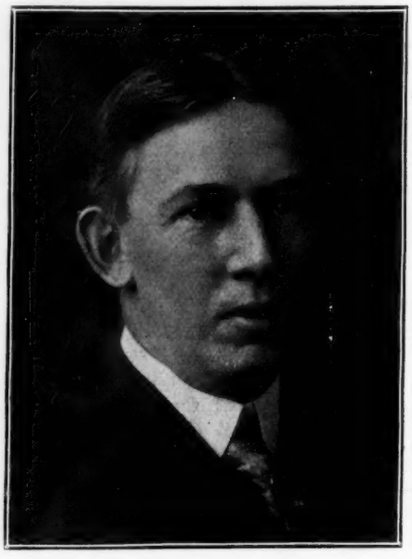
## OBITUARIES.

William S. Simpson, president of the Christopher & Simpson Architectural Iron & Foundry Co., died Jan. 28, at his home at St. Louis, aged 62 years.

Edward P. Williams, formerly member of the Ely & Williams Co., iron and steel dealer in New York City, died Feb. 8 at Los Angeles, Cal., aged 64.

Clark Kelly of Goshen, Ind., died Jan. 28, in a hospital at Indianapolis, aged 48 years. He was connected with the Kelly Foundry & Machine Co., of Goshen, for many years.

Walter Morrison Allen, works manager of the Warner & Swasey Co., passed away on Feb. 8, at his home in Cleveland, where for weeks he had calmly and patiently borne great suffering. Mr. Allen was born in Bristolville, O., Dec. 14, 1866. As a boy he showed great aptitude for things mechanical, and at 18, on April 20, 1885, he began work as an apprentice to the machinist's trade in the works of Warner & Swasey and throughout his course was marked by earnestness, ability and integrity. In 1891, he was made the head of the drafting room. During the next two years, the details of the design and construction of the 26-inch telescope of the Naval Observatory and the 40-inch of the Yerkes observatory came largely under Mr. Allen's direction. When scarcely 27 years of age, he was made superintendent of the works, and in 1904 works manager. Mr. Allen ranked high as a designer of machinery and tools and was gifted with quick perception and good judgment. He was unusually well posted in engineering subjects generally and took an active part in both planning and carrying out the details of construction of the present new shops. He was a member of Calvary Presbyterian church, of the American Society of Mechanical Engineers, and several Cleveland clubs.



WALTER M. ALLEN.

Thomas McBride, manager of the crucible department of the LaBelle works of the Crucible Steel Co. of America, died recently at his home in Pittsburg, aged 64 years. He held the same position with the LaBelle Steel Works, Pittsburg, before that plant was absorbed by the Crucible Steel Co. of America.

John C. Williams, president of the Forest City Steel & Iron Co., Cleveland, died Feb. 8 at his home in that city, aged 69 years. He was formerly a leading railroad construction engineer, being actively engaged on the first survey of the B. & O west from Cumberland, Md., later securing the right of way for the first telegraph line between Washington and Baltimore in 1851. He became chief engineer of the Cleveland & Mahoning railroad, later a part of the Erie system, and was afterward identified with the Lake Shore railroad, finally being general superintendent of the Chicago & Atlantic. Three children survive, one of whom is John S. Williams, formerly general manager of the Forest City company.

## MILWAUKEE METAL TRADES ANNUAL MEETING.

The Milwaukee Metal Trades and Founders' Association held its annual meeting and dinner Jan. 29, at the Hotel Pfister. The following officers were elected for the year: Prsident, Edward W. Kearney, of Kearney & Trecker; vice president, W. C. Frye, of the Chain Belt Co.; treasurer, Hugo Froehlich, of the Milwaukee Stove Works; director in the foundry section for three years, George Smith, of the Smith Steel Casting Co.; director in the machine shop section for three years, Theo. Vilter, of the Vilter Mfg. Co. Ernst Kastner, of the B. Hoffman Mfg. Co., was elected a director in the machine shop section for two years to fill the vacancy caused by the election of Mr. Kearney as president. Following the general business meeting, a banquet of 70 plates was served. The retiring president, S. L. C. Knox, of the Bucyrus Co., officiated as toastmaster. Judge Paul D. Carpenter spoke on "Employers' Liability and Workmen's Compensation;" and Edwin S. Conway on "Twentieth Century Commercialism."

# AMONG MACHINERY MAKERS.

## MILWAUKEE.

### Encouraging Increase of Business Among Manufacturers.

Milwaukee, Wis., Feb. 8.—February is opening very favorably for Milwaukee machinery manufacturers and indications are that business will present some improvement over January. Orders are arriving at a very satisfactory rate, and while some of the largest plants are not operating at full capacity, it is because some of the work called for in the big contracts has not reached the shops but is still in the drafting room. The present week will find plenty of activity with all of the leading concerns.

The gas engine shops of the Allis-Chalmers Co., at West Allis, near Milwaukee, are busy at the present time, due to the shipping out of a large number of power and blowing engines on old orders and the commencement of work upon new. One of the largest contracts recently entered into by the Allis-Chalmers Co. is that which calls for the furnishing of additional equipment for the plant of the Pittsburg Plate Glass Co., at Crystal City, Mo., which already contains the famous "Big Reliable" unit of 3,500 kilowatts capacity, exhibited by the Allis-Chalmers Co. at the Louisiana Purchase Exposition in St. Louis. The new apparatus consists of two Allis-Chalmers alternating current generators of 3,000 kilowatts combined capacity, each driven by a 34 x 48-inch horizontal twin-tandem Allis-Chalmers gas engine. The rotative speed is 107 revolutions per minute and the total weight of each unit is about 1,000,000 pounds, the fly wheel alone weighing 120,000 pounds. These units have been designed to carry full load at 85 per cent power factor and are guaranteed to operate in parallel, delivering 25-cycle, 3-phase current at a terminal pressure of 2,300 volts. For the Kokomo, Ind., plant of the same company, the Allis-Chalmers Co. is building three gas engines and generators of the same characteristics, but each of half of the capacity.

Representatives of the Cutler-Hammer Mfg. Co., which recently increased its capital stock from $1,000,000 to $1,100,000, say that the step was a natural sequence of increasing business and that additions may be made to the plant in the coming spring. No stock has been issued to cover the added capital.

The Fred M. Prescott Steam Pump Co., West Allis, is meeting with a satisfactory business of late. Some very substantial orders have been received for the successful deep mine pumps manufactured by the concern.

Prospects look so good to the Gerlinger Steel Castings Co., West Allis, that future additions to the plant are contemplated. The company has purchased a strip of land between Sixtieth avenue and Michell street, and will put up a new foundry addition, 40 x 30 feet, in the near future.

Work on the addition to the plant of the Pressed Steel Tank Co., West Allis, is progressing favorably. The two-story brick structure, 250 x 120 feet, to cost $30,000, was made necessary by the demand created for the new seamless pressed steel barrel which is now being manufactured by the company.

Edward Fink, of Milwaukee, the inventor of the new Fink process of copper ore smelting, has returned from New York, where he met Samuel Newhouse, the multi-millionaire Utah mine owner, who built the experimental plant which demonstrated the success of the Fink invention and who is preparing to introduce it on a large scale. Mr. Fink announces that most of the machinery required for the large plants to be constructed in the near future will be built in Milwaukee shops. Said he:

"We have already so many orders on our hands for our new smelting machinery that we cannot possibly meet the demands for some time to come and we have been forced to refuse orders from big mining concerns all over the country. We shall not turn out any more of the small plants for ourselves, but our next plant will have a capacity of 300 tons per day."

The plant of the Wisconsin Engine Co., Corliss, Wis., is busy filling orders that are arriving for the company's horizontal cross compound and horizontal vertical compound Corliss engines which are meeting with such success wherever they are installed.

The Nortmann-Duffke Foundry Co., Milwaukee, is building a two-story engine house in addition to the present power plant, which will enable the company to take on additional employes in the near future. The new structure is 28 x 46 feet and of concrete.

The Porcelain Enameling Association of America, represented at Sheboygan, Wis., by the new Vollrath plant, has completed the erection of a new warehouse, 60 x 150 feet. The company now has six large buildings with total dimensions of 60 x 1,200 feet. The plant is being operated at full capacity and 175 men are being employed.

Millin Bros. are planning the erection of a new machine shop and sawmill at Patch Grove, Wis. Expert machine work of all kinds will be done.

In order to supply the rush orders for cast iron, the John Rice Foundry & Machine Co., at Stevens Point, Wis., is installing a new 1-ton capacity cupola. The 25-ton cupola will now be reserved for the larger jobs and the company is prepared to melt from 500 to 50,000 pounds of iron as necessity demands.

## CINCINNATI.

### Prompt Delivery Demanded—Two Concerns Will be Consolidated.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Feb. 9.

The most important feature in reference to the demand for machine tools is the call for immediate shipment upon the placing of an order. This seems to indicate that the purchaser has put off buying until the purchase has become a matter of necessity, and the fact that a slight improvement in demand is noticeable indicates that the requirements of manufacturers are gradually increasing. The general business situation in machine tools remains quiet, and a slight improvement is easily noticeable. The demand for prompt deliveries has forced some of our shops to work overtime in order to make prompt shipments in cases where the machine ordered was not in stock. It is, however, the policy of the shops to be prepared for these immediate shipment orders, either by carrying the machine on the floor or having the parts all made ready for assembling. It is encouraging to note that one of our manufacturers has been compelled to add additional equipment in order to fill some rush orders.

Confidence in the future development of the demand for machinery is in evidence all through the shops and there is a general air of preparedness in the changes being made in

systems and new installations to replace old equipment. Reports from selling agencies on the outlook are increasingly more encouraging.

The most important event of the week in machine tool circles has been the purchase of the Bickford Drill & Tool Co., by the Cincinnati Machine Tool Co. The two concerns will be merged into one and a new company will be incorporated called the Cincinnati Bickford Tool Co. The capital stock will be $500,000. A. H. Teuchter, of the Cincinnati Machine Tool Co., will be president, and Sherman Schauer, of the same company, vice president and general manager of the new company. For the present the two shops will be operated in their present locations, but a factory site in the factory colony at Oakley has been secured and it is the intention to build a new plant on this site. The consolidation of these two concerns, one making upright drills and the other radials, will give Cincinnati what is regarded as the largest plant in this country devoted to the manufacture of drills.

The Cincinnati Pulley Machinery Co. has secured recently a number of orders for high speed drills and riveting machines and has been forced to work overtime the past week to fill these orders. The company has been forced to add to its equipment and is installing a 16 x 8-inch LeBlond lathe, a 14 x 6-inch Hendy & Norton lathe, a 10-inch Champion lathe and a 14 x 8-inch American lathe. Also a cutter and tool grinder for ball bearings, bought from the Cincinnati Milling Machine Co.

Nelson W. Dingwall, secretary of the N. M. T. A., has resigned that position to become secretary and treasurer of the Chicago Drop Forge Co., at Chicago. Commissioner Wuest expresses sincere regret in losing the assistance and association of Mr. Dingwall.

## PITTSBURG.

### Mesta Machine Co. Doing a Very Satisfactory Business.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Feb. 9.

There is a spotty condition evident in the machinery market. For some large manufacturers in this district, the business booked during the month of January showed a marked margin of gain over December. This was especially the case with some makers of rolling mill machinery and mill engines. At the same time, such a condition was exceptional. The general run of the trade, while anticipating an improved future demand by reason of the better prospects now in the market, and enjoying in some instances a gradual betterment, cannot perceive any decided changes in the situation. Low prices generally are the rule in the market, and this is not contributing to the improvement of sentiment. Small engines are not so active, and in pumps the demand is not particularly strong, as the mining companies are doing but little buying. Some nice purchases of pneumatic tools are being made by the railroads, but this does not apply to machine tools and the latter market continues dull.

The Pittsburg Plate Glass Co. has closed for three 1,600-horsepower gas engines for installation at its plant at Kokomo, Ind. The engines will be direct connected to 1,000-kilowatt generators.

The Seneca Iron & Steel Co., Buffalo, is installing two additional sheet mills in its plant. With these mills completed, the company will have a total capacity of seven sheet mills.

The N. C. Davidson Co., Keenan building, Pittsburg, reports a good demand for Yoeman's duplex sewage ejector. Recent orders taken include two ejectors of 150 gallons per minute capacity each, for the new Mercantile building, Pittsburg, and one ejector of the same capacity for the new First National Bank building, Pittsburg.

The Crane-Best Co., though it has made no definite inquiries, is figuring upon a gas engine plant for its new works at Oakmont, Pa. Estimates have been taken on units of several different capacities.

G. W. McClure, Son & Co., Bessemer building, Pittsburg, have just received an order from the Buffalo Union Furnace Co., Buffalo, N. Y., for a McClure stove 18 feet in diameter x 75 feet high. Recently the McClure company took a similar order from the same company, and is now at work upon the installation. Two additional stoves will make a total of three stoves of the McClure type at the plant of this furnace company.

The new business booked during the month of January by the Mesta Machine Co., Pittsburg, with works at West Homestead, Pa., far exceeded that of any other month since the beginning of the present depression. Among the numerous orders entered was one for the Pittsburg-Buffalo Co. for its new plant at Marianna, Pa., consisting of a twin piston valve hoisting engine, 36 x 60 inches, and two compressors, 22 x 36 inches, steam end and 24 x 20 inches air end by 48-inch stroke. The 26 x 48-inch Mesta Corliss engine which was built for the same company has been erected at the plant and is now in operation. The West Penn Steel Co., Brackenridge, Pa., during the past week ordered a 38 x 60-inch Mesta Corliss engine direct connected to bar mill, and a 40 x 60-inch simple Mesta Corliss engine and rope drive for the sheet bar train. The rope drive consists of a 10-foot driving pulley and a 24-foot driven pulley with a 15-foot face. A 42-inch cold saw was purchased by the Pennsylvania Steel Co., Steelton, Pa., and a number of ladles for ladle cars by the Colorado Fuel & Iron Co.

For Holander barometric condensers the following orders were taken during January: Youngstown Sheet & Tube Co., an 84-inch type "B" condenser, and Allentown Portland Cement Co., Allentown, Pa., a 57-inch type "A" condenser. A 72-inch condenser for the Alpha Portland Cement Co., and a 72-inch condenser for the Seaboard Portland Cement Co. were shipped by the Mesta company last week, as well as a 28-inch sheet mill train for the Berger Mfg. Co., Canton, O. In addition, the company received a number of orders for vanadium chilled rolls and water chilled rolls.

If the business of the Mesta Machine Co. continues to improve at the same gait of the past 30 days, it will only be a short time until the entire extensive plant of the company will be operating at its full capacity.

## NEW YORK.

### Large Orders Not Numerous—Panama Canal Supplies.

Office of THE IRON TRADE REVIEW.
Room 1005, No. 90 West St., Feb. 9.

Following the circulation of the Lackawanna list, as reported a week ago, and of the Clinchfield list, there has been no important development in the machine tool trade, and business closed during the past week has not been large. There is a fair run of small orders and second-hand machinery is enjoying its usual activity, but otherwise the market continues in much the same course as heretofore. Some call is noted for cement mill equipment.

With the award to the Wellman-Seaver-Morgan Co., Cleveland, of the contract for the eight cantilever cranes for cement service on the Pacific locks, the heavy purchasing for Panama canal account seems to be over for the present, although there will be further purchasing from time to time for replacement purposes up to the time the excavating is finished. As it is, the government now has in the neighborhood of $25,000,000 invested in its plant

along the isthmus, steam shovels, rolling stock, excavating and material handling equipment, etc.

The MacIntyre Iron Co., Port Henry, N. Y., is engaged in some important development work in the Lake Sanford, N. Y., iron ore district. The company was incorporated in 1894, and George C. Foote is treasurer and general manager.

The Standard Meter Co., Philadelphia, has let contracts for the erection of a three-story factory building, 50 x 70 feet, and of a boiler and engine house at Sevententh street near Clearfield, the cost being about $12,000. The work is to go forward at once.

The Bee Hive Hygienic Ice Co., 608 Lexington avenue, Brooklyn, N. Y., has closed with the York Mfg. Co., York, Pa., through the latter's New York agent.

The Pennsylvania system has had plans prepared for a large boiler shop at Renovo, Pa., the estimated cost being in the neighborhood of $125,000. No decision to proceed with its erection has been reached, however.

Figures have been taken on a shop building, 180 x 200 feet, for the ship building plant of the Harlan & Hollingsworth Corporation at Wilmington, Del. There have been reports for some time of important additions contemplated for these works, and this building is taken to mean the beginning.

Plans have been prepared for a large brick and concrete power house for the Blake & Johnson Mfg. Co., Waterville, Conn. The plant will be equipped with coal pockets of concrete and steel.

A canning factory to cost $50,000 is to be built at Medina, N. Y., for the Burt-Olney Co., which recently purchased a site along the New York Central Railroad.

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Under the title, "Current Practice in Steam Engine Design," a bulletin has been issued by the University of Wisconsin which will be of special interest to purchasers of steam engines as well as to designers and manufacturers. The monograph was prepared under the direction of the late Storm Bull, professor of steam engineering, University of Wisconsin, by O. N. Trooien. The book contains more than 40 charts showing the proportions, weights and dimensions of all of the essential parts of Corliss and high speed automatic engines, besides formulae for the designing of all of the essential parts of a steam engine. The book is intended for general distribution.

## PROMPT SETTLEMENT

### Of Tariff Question Demanded at Banquet of New England Association.

The sixteenth annual banquet of the New England Iron and Hardware Association was held Tuesday evening, Feb. 2, at the Hotel Somerset, Boston, with upward of 175 members and guests of the organization participating. Although the after-dinner speaking did not embrace trade topics, except as they were touched upon incidentally in reference to the tariff and the improving outlook for business, the evening's oratory was of an unusually inspiring character, and commanded the rapt attention of the listeners.

President Augustus P. Marble, Boston representative of the Jones & Laughlin Steel Co., occupied the chair, and introduced as toastmaster Hon. William F. Garcelon, whose presentations of the speakers of the occasion, Lieut.-Gov. Louis A. Frothingham, Congressman Finis J. Garrett, of Tennessee, and United States Senator J. P. Dolliver, of Iowa, were apt and witty. He assured the guests from Washington that no secret service men were present, and that they could indulge in absolute freedom of speech. President Marble's remarks were direct and optimistic, in keeping with the spirit of the gathering. He said in substance:

As you all know, the panic is a thing of the past, and we can look forward to the future with renewed confidence. While business is not what we would all like to see it, I think we should feel encouraged that it is gradually increasing. In the meantime, the farmers, aided by nature, have been busy adding to the wealth and prosperity of the country by harvesting a crop estimated by the secretary of agriculture to be worth over seven billions of dollars, and while it is early to predict what this year's harvest will be, it is fair to assume that we shall have at least an average one.

With all this increased wealth, and money as plentiful as it is today, there should be no reason why the manufacturing industries and the commerce of the country should not be at normal, but for the question of the tariff. I believe that it is not only the duty of this organization, but of every business organization of the country, to use its influence to have this tariff question settled with all the promptness possible, and not allowed to drag along. Such influence, rightfully used in the special session of congress, would prove that while the business interests of the country did not wish to hamper the lawmakers, yet it is necessary and of vital importance that the tariff question be settled as speedily as possible. With this question settled, we shall once more enjoy the fruits of prosperity and the wheels of industry and commerce will go forward with renewed vigor.

The lieutenant governor of the commonwealth was the next speaker. Mr. Frothingham extended the greetings of Massachusetts, referred to the prestige of the state in many lines of manufacturing and said that her people have a very direct and vital interest in the tariff revision propositions that are to come before congress shortly. Paying graceful tributes to the states of Iowa and Tennessee, he said that, like Massachusetts, they had their great traditions and great men, naming especially Senator Allison, of the former state, and Andrew Jackson, a native of Tennessee.

Congressman Garrett, who was next presented, said there are many characteristics of the south and New England that have a marked similarity. They are solid politically, although adhering to opposing parties; they are both tenacious of state rights; and each has a glorious heritage from the past. He referred to the race problem, which, he said, the south must work out in a spirit of justice, and to the tariff problem, which, he contended was of particular moment to the south because its interests are so largely agricultural, making a high tariff a burden upon its people.

While the toastmaster was introducing Senator Dolliver a large portrait of Abraham Lincoln, previously hidden by a drapery of flags behind President Marble's chair, was unveiled, and the announcement was made that the speaker, in view of the approaching centenary of the birth of Lincoln, would take the career of the great emancipator as his theme. A toast to Lincoln's memory was then proposed, and the senator entered upon a most eloquent eulogy.

The program was enlivened with music by an orchestra and the singing of popular songs by the assemblage at intervals during the evening.

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Two additional 28-inch sheet mills are being installed by the Lloyd Booth department of the United Engineering & Foundry Co., at the roofing plant of the Youngstown Iron & Steel Roofing Co. When these mills are completed the plant will have eight hot mills.

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T. W. Gurley Mfg. Co., Meyersdale, Pa., gasoline engines, advises that it will rebuild with fireproof buildings, following its recent fire, and will replace all machinery, lathes, shapers, planers and all hand tools.

## CONDITIONS IN THE COKE REGIONS.

Coke conditions and production in the Connellsville regions show little improvement or change. Since the beginning of the new year the output has remained above 250,000 tons weekly, despite the attempt made by some independent interests to curtail the operations because of the excessive supply of furnace coke that had accumulated. While a number of the smaller interests have put out their operations and other companies have reduced their number of active ovens, other producers have increased their coking capacity, so that the losses and gains have been about equalized. The continued low prices being made on spot furnace coke is unsettling the general situation.

The W. J. Rainey coke interests have fired 185 ovens of their new plant at Royal, Pa., in the lower Connellsville region. The ovens are strictly modern and are mechanically drawn. The complete plant will comprise 800 ovens.

The Mt. Pleasant Coal & Coke Co. is erecting a model coal and coke works near Hecla, Pa. To date 100 ovens have been built but others will be added.

At the annual meeting of the Consolidated Connellsville Coke Co., at Uniontown, Pa., Feb. 2, the following officers were re-elected: President, W. C. Magee; vice president and general manager, George Whyel; secretary and treasurer, I. W. Seamans. The board of directors was re-elected.

## PHILADELPHIA FOUNDRYMEN'S ASSOCIATION.

The February meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club, Feb. 3, had as its principal speaker Bradley Stoughton, 165 Broadway, New York, who discussed "The Open-Hearth and Basic Furnace, Compared With the Side-Blow Converter and Crucible Processes for Making Steel Castings as to Quality, Size and Cost." This paper was largely along the lines of an address by Dr. Stoughton before the Pittsburg Foundrymen's Association in December, and reported fully in THE IRON TRADE REVIEW. It contained considerable additional material, however. The ensuing discussion was largely a defense by several members of the basic process. The meeting was also featured by a discussion on "The Ocean Mail Bill" by J. W. Powell, of the Wm. Cramp & Sons Ship & Engine Co., this being followed by an address by John A. Penton, Cleveland, on merchant marine topics. The proposed pig iron specifications submitted by a committee of the association at the January meeting were again brought up for discussion; this committee report will be supplemented by another some time in the spring after a series of conferences with other interested bodies. The Topton Foundry & Machine Co., Topton, Pa., was elected to membership.

## TIN PLATE DISCUSSED.

The National Canners' convention, held last week at Louisville, Ky., brought out considerable discussion as to the quality of tin plate used in the manufacture of cans for preserving purposes. The suggestion was made by L. A. Sears, representing a large western association, that "it would be advisable to secure the cooperation of the plate makers, canners and food standards committee, and agree upon a specification that would be acceptable to all parties concerned, and have a grade of tin plate established known as 'canners' grade,' same to be incorporated in the pure food law." This speaker admitted that a coating of 2½ pounds to the base box is ample.

Dr. Wiley, chairman of the board of food and drug inspection, declared that the tin cans recently examined by the bureau of chemistry fell far short of this standard, the quantity of tin in no instance reaching the 2½-pound rate. He insisted, however, that the chief essential is that the surface of tin be continuous, containing no perforations.

The American Can Co. has announced the schedule of prices on packers' cans for the coming season. These prices, which are slightly below those ruling during the past season, are as follows per 1,000 cans: No. 1, $10; No. 2, $13.75; No. 3, $18.25; No. 4, $44.

## WHARTON STEEL OFFICERS.

Harrison S. Morris, treasurer of the Wharton Steel Co., Philadelphia, has been elected president as well, thus filling the vacancy caused by the recent death of Joseph Wharton, founder of the company. The revised list of officials, as elected at a meeting held Feb. 1 at Wharton, N. J., is as follows: President and treasurer, Harrison S. Morris; vice president, J. Bertram Lippincott; secretary, Harry S. Wenner; directors, the three mentioned, Edward Kelly and Benjamin Nicoll.

The Wharton Coal & Coke Co., at a meeting held in Philadelphia, Feb. 4, elected the same officers as the steel company, with the exception that only Messrs. Morris, Lippincott and Wenner are directors.

Another subsidiary, the Andover Iron Co., will hold a meeting Feb. 10 at Wharton, N. J., for the election of officers. These will be the same as those of the steel company. Two additions will be made to the directory board, bringing the number up to seven.

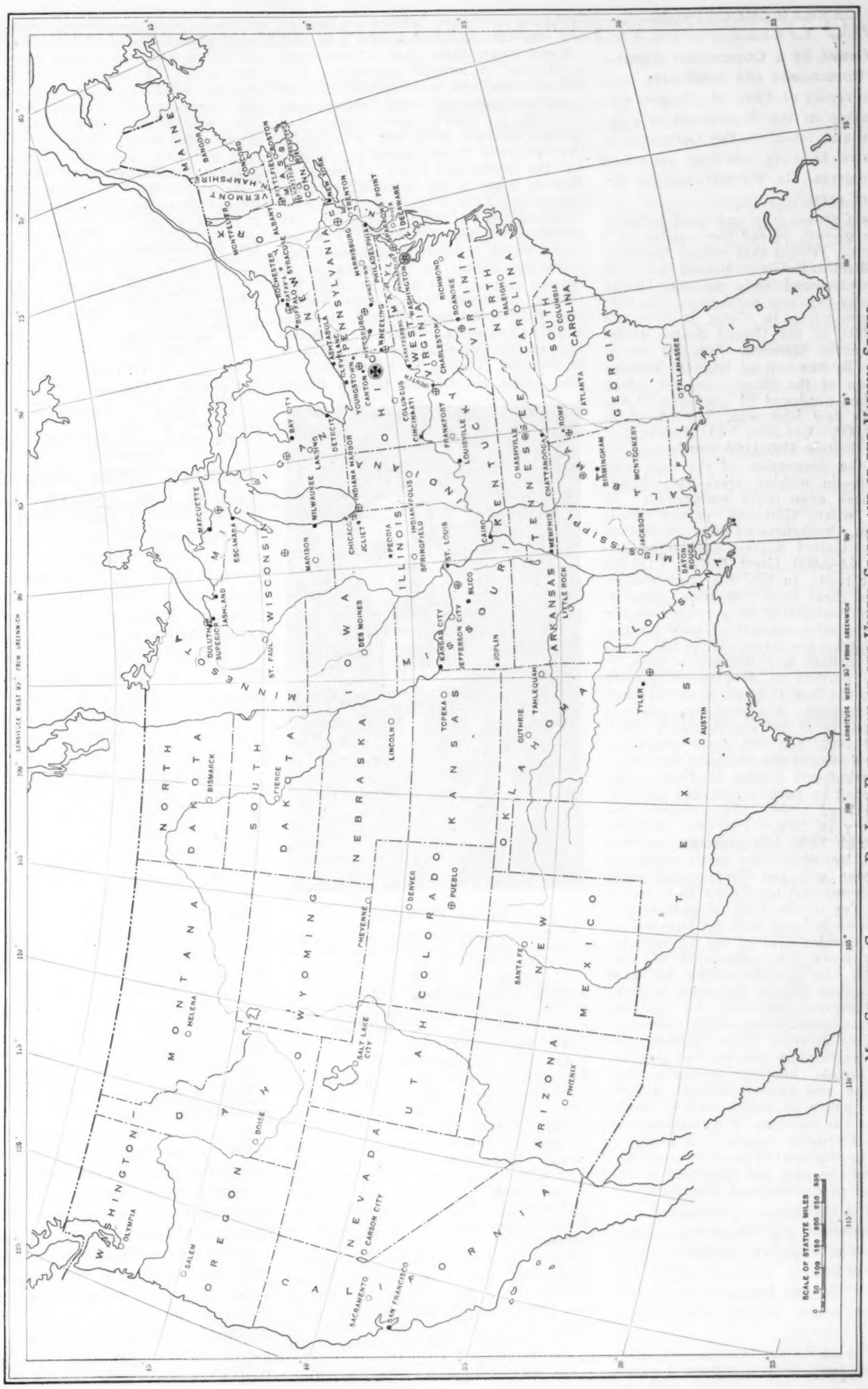
## THE CENTER OF PIG IRON PRODUCTION.

On the opposite page is presented a map of the United States on which is located the center of production of pig iron of the United States based on the figures for the last six months of 1907 and the first six months of 1908. This center will be found in the eastern part of the state of Ohio, a short distance south of the city of Canton. Located more definitely with reference to the large cities, it is 70 miles south of a line drawn east and west through Cleveland and about 15 miles east of a north and south line through the same city. It is 76 miles due west of Pittsburg and about 60 miles southwest of Youngstown. It coincides almost exactly with the little town of New Philadelphia, Ohio. It is marked on the map by the maltese cross inscribed in a double circle.

In connection with the determination of this center, it was necessary to determine the centers of production of the various states. These are indicated by the crosses inscribed in single circles. The following table indicates these centers with reference to prominent cities or towns in the various states:

| | |
|---|---|
| Alabama | 24 miles northwest of Birmingham. |
| Colorado | at Pueblo. |
| Connecticut | 35 miles west of Hartford. |
| Georgia | 13 miles southwest of Rome. |
| Illinois | 15 miles south of Chicago. |
| Indiana | at Indiana Harbor. |
| Kentucky | 13 miles west of Ironton, O. |
| Maryland | at Sparrows Point. |
| Massachusetts | 2 miles west of Pittsfield. |
| Northern Michigan | 40 miles southeast of Marquette. |
| Southern Michigan | 38 miles west of Bay City. |
| Minnesota | at West Duluth. |
| Missouri | 40 miles southwest of St. Louis. |
| New Jersey | 35 miles northwest of Trenton. |
| New York | 5 miles west of Batavia. |
| Ohio | 35 miles southwest of Youngstown. |
| Pennsylvania | 20 miles northwest of Johnstown. |
| Tennessee | 47 miles north of Chattanooga. |
| Texas | 27 miles southeast of Tyler. |
| Virginia | 25 miles west of Roanoke. |
| West Virginia | 3 miles south of Wheeling. |
| Wisconsin | 96 miles northwest of Milwaukee. |

It is proposed at later dates to determine the center of production during other years, in order to show in what direction this center has shifted, if at all, due to the building of new capacity.




MAP SHOWING CENTER OF PIG IRON PRODUCTION OF THE UNITED STATES AND OF THE VARIOUS STATES.

## GERMAN INDUSTRIES

### As Viewed by a Government Agent—Government and Syndicates.

The report of Chas. M. Pepper, special agent of the department of commerce and labor, in the German iron and steel industry, has been submitted to congress. In his introduction Mr. Pepper says:

The German iron and steel industry is the growth of the last quarter of a century. Within that period Germany has distanced Great Britain and has become second only to the United States in raw iron production. In 1885 the production in Great Britain was 7,534,000, in the United States 4.109,-000, and in Germany 3.687,000 metric tons. By the end of 1907 the relative position of the three countries which together produced 81 per cent of the world's raw iron was: United States 26,194,000, Germany 13,046,000, and Great Britain 10,083,000 metric tons.

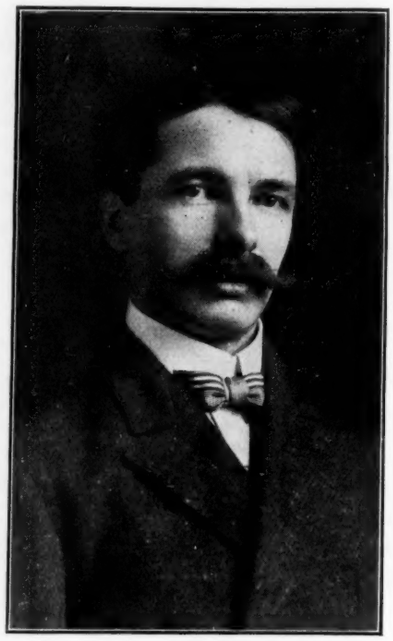
In the conversion of the raw iron, that is—in making steel—the change has been even more momentous. In 1900, when Germany passed Great Britain, the figures of steel production were: United States 10,382,000. Germany 6,646,000, Great Britain 5,131.000 metric tons. In 1907 the steel production of these three countries, comprising approximately 80 per cent of the world's total, stood: United States 23,733,000, Germany 12,064,000, and Great Britain 6,627,000 metric tons.

The periods of progressive growth during the last 25 years have not been uninterrupted. A partial paralysis was the penalty of the extraordinary activity of 1900, and the rapid expansion which followed the recovery from that depression culminated in 1907 to be succeeded by sharply curtailed demand, demoralized prices, and universal uncertainty in 1908. The year 1909 begins with little improvement, and the means by which the crisis is to be overcome will put German industrial and commercial conditions to a severe test. Yet in the light of past results the future is faced with confidence.

The development of the German industry from the production of raw iron to the transformation of steel into finished articles has some remarkable economic features. In business organization and commercial methods, in the syndication of the products, in transportation, in the relative proportions sought between domestic consumption and exports abroad, a consistent policy is maintained throughout. As the outcome of this consistent policy, Germany continues a constant factor in the world's markets, notwithstanding the new and changing conditions of production and distribution.

Among the subjects considered are: Raw materials, pig iron districts, price movements, wages and workmen, trusts and syndicates, transportation and freight rates, and foreign markets. On the last named subject, Mr. Pepper says:

In striving for the international markets, the German iron and steel manufacturers are quite willing to expand the system of syndication. At the present time there are international syndicates in several products. The German coal and coke syndicates have an arrangement with the Belgian coke syndicate by which French territory is divided between them, and occasionally the syndicate in one country will sell to the other coke for delivery in France. Some of the international syndicates are little more than price conventions, while others relate to the partition of the territory. The intangible but potent international rail syndicate counts in Germany as a leading member. It is understood that the rail syndicate includes the American, British, German, French, Belgian, and Spanish mills. Under it Germany has special priveleges in the markets of Sweden, Norway, and Denmark. It also keeps out of the United States



GEORGE W. SMITH,

Traffic manager of the Lackawanna Steel Co., at Buffalo, who has been elected president of the Central Railway Club.

market, while dividing with the mills of the United States and with Great Britain, France, and Belgium, the South American territory.

The tube syndicate keeps it out of American territory in the sale of gas pipes, while under the rolled wire syndicate a division of the territory is obtained. Under the tube syndicate a division of the territory is also obtained. Under the tube syndicate arrangement the German works keep out of the French territory, and in compensation for which the French leave Belgium, Switzerland and Holland to Germany.

While favoring the principle of international syndicates, the German manufacturer, as a rule, is not willing to join them unless assured that the German industry obtains its full share of present markets without prejudice to further development.

Mr. Pepper says that the non-action of the imperial government and of the state government concerning trusts is not to be taken as a fixed and permanent policy. It is considered possible that one of the ultimate results will be the absorption of the greatest syndicates controlling raw material by the government itself. This relates to the coal syndicate and more immediately concerns the kingdom of Prussia.

As to costs of manufacturing, Mr. Pepper gives the following figures:

| Dortmund district and city: | Marks. | |
|---|---|---|
| Cost of 1 ton basic raw iron..... | 57.00-60.00= | $13.57-$14.28 |
| Conversion 1 ton raw iron to steel | 14.00-16.00= | 3.33- 3.81 |
| Labor cost 1 ton basic raw iron.. | 3.50- 4.00= | .84- .96 |
| Luxemburg: | | |
| One ton basic pig iron with 1½ per cent of manganese ..... | 52.00-53.00= | 12.38- 12.61 |
| Conversion 1 ton pig iron into steel billets ... | 24.00-25.00= | 5.71- 5.95 |
| Labor cost 1 ton pig iron ..... | 2.50- 3.00= | .60- .72 |

## FREIGHT RATES ADVANCED.

Freight rates from Pittsburg-Buffalo territory to Pacific coast points on practically all finished iron and steel products, with the exception of wrought iron pipe including steel pipe and tin plate, have been advanced. Plates, shapes, bars and sheets have been raised 5 cents per 100 pounds to 80 cents in car lots and $1.30 in less than car lots. Wire was advanced from 77 cents to 80 cents in car lots, and to $1.30 in less than car lots. Wrought iron pipe, though unchanged in carload lots, was advanced in less than carload lots from $1.25 to $1.50. Fabricated material and structural iron were not changed. The advance in pig iron was 16 cents a ton to $14 per gross ton, and in rails from $12.50 to $13.50 per gross ton. Billets were raised from 0.612c to 0.734c per 100 pounds. The new rates on finished iron and steel products per 100 pounds are as follows:

| | Less car lots. | Car lots. |
|---|---|---|
| Plates ..... | $1.30 | $0.80 |
| Shapes ..... | 1.30 | 0.80 |
| Bars ..... | 1.30 | 0.80 |
| Sheets ..... | 1.30 | 0.80 |
| Tin plate ..... | 1.00 | 0.75 |
| Wire ..... | 1.30 | 0.80 |
| Wrought iron pipe..... | 1.50 | 0.65 |
| Fabricated material ..... | 1.25 | 0.80 |
| Structural iron ..... | 1.25 | 0.80 |

The Nelson Valve Co., Philadelphia, gate and check valves, advises that its recent incorporation was made for the purpose of taking over a New Jersey corporation, and increasing the capital from $100,000 to $1,000,000. It has started upon the erection of some of its new buildings, for which contracts have been let. The new buildings will double the company's capacity in the manufacture of high grade valves.

# THE GRONDAL METHOD OF CONCENTRATING ORE[1]

## A Description of the Wet Magnetic Methods and Apparatus Now Extensively Employed in Sweden and in Other European Countries

By N. V. Hansell.[2]

During the last century, iron ore has played the foremost role in the mining industry of Sweden. While the outputs of other ores in that country do not reach amounts comparable with those of other mining countries, that of iron ore is of very respectable size and puts Sweden in the sixth place among iron ore producing countries. During the year 1906 4,501,656 tons were mined.

Until the last decade or two, the greater part of the Swedish iron ore came from the old iron mining districts in the central part of the country. The ores there were generally of good quality, but the mines, having been in operation for very long periods, some of them for three or four hundred years, began to show signs of exhaustion. It was natural that under such conditions, when the chief iron works were depending upon this ore, which had made the reputation of Swedish iron worldwide, the inventive minds of the country should turn on one hand to the improvement of the magnetic methods of prospecting for ores, and on the other to the development of separating methods by which the large bodies of low grade iron ores, which up to that time had not been considered of sufficient value to be mined, could be profitably worked. The result of the former movement was the origination of the well known magnetometric surveying methods for iron ores, which are incomparable for the determination of the exact location, the extent in field, and the approximate size of magnetic ore bodies.

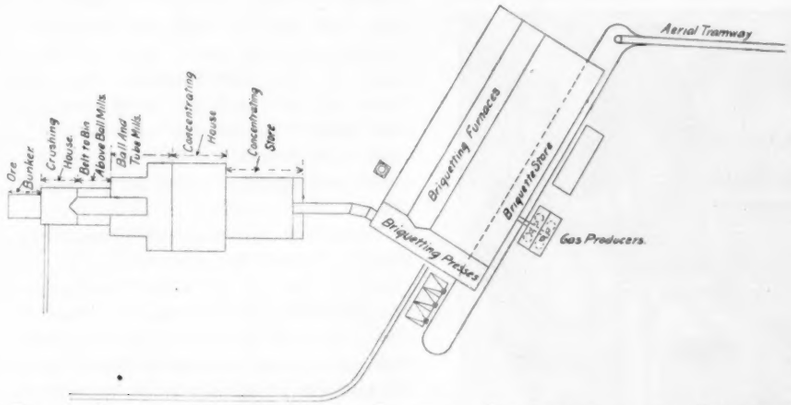



FIG. 1—GENERAL ARRANGEMENT OF CRUSHING, CONCENTRATING AND BRIQUETTING WORKS AT STROSSA, SWEDEN, PRODUCING 80,000 TONS OF BRIQUETTES ANNUALLY.

From the second movement came the development of magnetic ore dressing. It was long, however, before this obtained extensive use. In the Swedish magnetic ores the magnetite is generally intimately mixed with a matrix of some combination of several of the following minerals: Pyroxen, amphibol, garnet, clorite, talc, feldspar, quartz, calcite, sometimes with the addition of iron and copper pyrites, apatite, etc. They are often so fine grained that a fine crushing is necessary before the separation can take place. On this account the concentrates are obtained in a highly pulverized state not very well adapted to direct use in the blast furnace. It was not until the development in the year 1898 of Grondal's method of briquetting fine iron concentrates that magnetic concentration proved to be an economic success and consequently became popular. One method of separating after another was devised. Every new type of magnetic separator constructed and tested by use was closely followed by an improvement. In this sharp competition, the separators constructed by Gustaf Grondal proved very successful. A number of plants with systems based on his inventions were erected, and today more than 25 of them are in operation in Sweden, where the method originated, in Norway, England, Spain, Italy and the United States.

### Chief Principles of the Grondal Methods.

The Grondal separating methods are essentially wet magnetic methods. The iron ore is crushed to such a fineness that the iron-bearing mineral, here of course magnetite, is freed from the gangue mineral. The mixture of ore and rock particles, carried by a stream

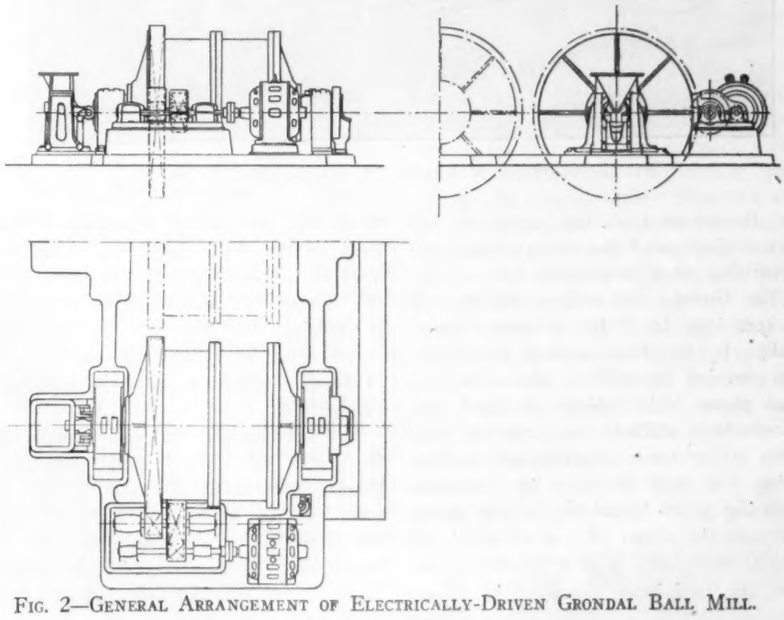


FIG. 2—GENERAL ARRANGEMENT OF ELECTRICALLY-DRIVEN GRONDAL BALL MILL.

[1]This will be followed by an article describing the Grondal method of briquetting iron ore concentrates.

[2]Member of the engineering firm of Hamilton and Hansell, 29 Broadway, New York City.

of water, is sent over the separator, which picks out of the pulp the magnetic particles. Although the separator proper is the most important member of the machinery in the plant, and on it the ultimate success of the operation rests, the combination of all the apparatus of the plant accounts for the general advantage of the process over others designed for the same purpose.

The most important parts of a complete Grondal plant are:

The separating plant comprising a ball mill, preceded by a suitable crusher, the slime box, the separator, the dewaterizer; and the briquetting plant consisting of a briquetting kiln.

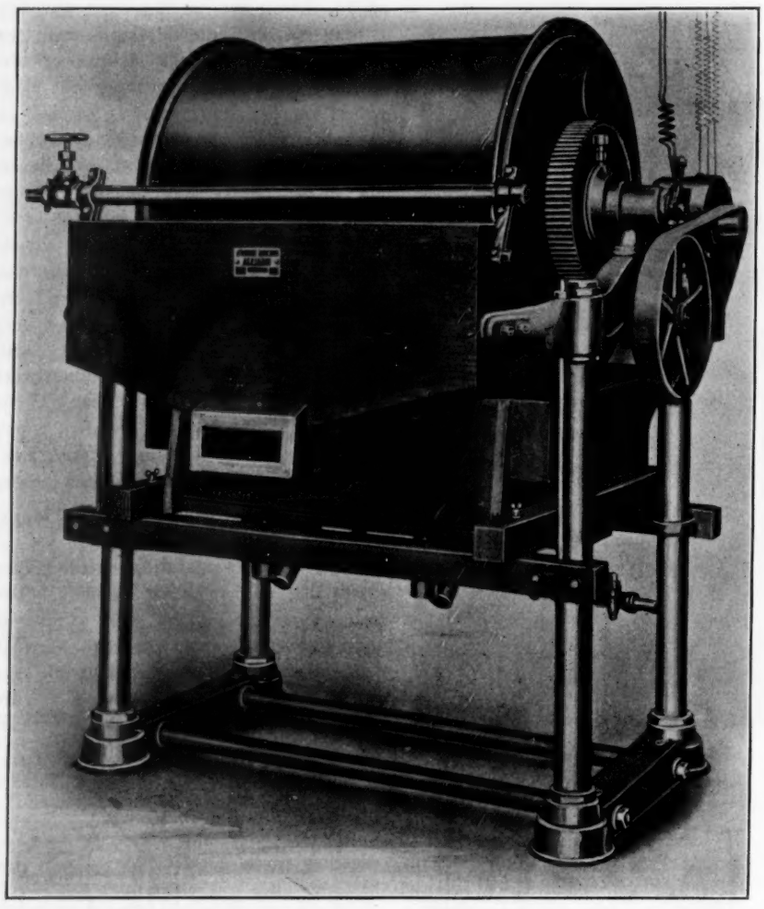


FIG. 3—GRONDAL MAGNETIC SEPARATOR, DIRECT DRIVEN.

The Grondal ball mill is usually built 7 feet long by 7 feet diameter, internally. It consists of an iron plate cylinder carried on rollers with cast iron end plates. The cylinder is lined with longitudinal chilled cast iron or steel bars which form a corrugated surface. They are kept in place by triangular wearing plates bolted to the end plates, through the center of one of which the ore is introduced with a stream of water, the feed being regulated by an ordinary roller feeder. Through the other end plate, it escapes as pulp, in a finely ground condition. The mill is charged with balls of chilled cast iron or steel ranging in size from 4 to 6 inches. It works at its highest efficiency when receiving an ore broken down to ¾ inch or ½ inch. The degree of fineness of the ground ore is regulated by the speed of the water current sweeping through the mill. This, as well as the correct speed of the mill, has to be determined by experiments with each separate ore. Generally a speed of from 18 to 20 revolutions per minute is employed. The wear of the balls is in the neighborhood of 2 pounds per ton of ore crushed. Twenty to twenty-five horse power is sufficient for the mill. Its capacity varies from 50 to 110 tons of ore per 24 hours, depending upon the character of the ore.

The ore leaving the ball mill is in the form of diluted pulp containing grains from about 20 mesh down. It would be of little avail to send over the separator the whole quantity of water which is necessary for the proper discharge of the ball mill. Most of it, with the bulk of the non-magnetic slimes, is therefore disposed of before it reaches the separator by a Grondal slime box. This is nothing more than a pyramidal box with a stream of clear water rising from the bottom, the box being arranged somewhere in the launder as an ordinary hydraulic classifier. The heavier ore and rock pieces sink to the bottom and are discharged. Over the box near the discharge end an electro-magnet with a hatchet-shaped pole piece is suspended. The magnetic slime, attracted by the pole, is stopped and held in suspension by it until a bunch heavy enough to sink through the water has been collected. Generally the slime boxes are arranged in pairs, with the north pole of the electro-magnet suspended over one box and the south pole over the other. Before the introduction of this slime treater, the fine magnetic particles were generally lost in the separation.

There are five types of Grondal separators, known by numbers 1 to 5. The Grondal No. 1 is the oldest, having been designed and manufactured in 1897. As this type and Nos. 2, 3, and 4 are more and more being replaced by No. 5, which is installed in the new mills, we will not here go into a detailed description of them, however interesting it would be in showing the development of the machine. In the *Engineering & Mining Journal*, May 11, 1907, in an article by Prof. G. Walfrid Peterson, "Magnetic Separation of Iron Ore in Sweden," they are described.

**No. 5 Grondal Separator.**

The Grondal Separator No. 5 consists of a number of electro-magnets of alternating polarity, around which is placed a brass drum revolving about one inch above the surface of the pulp which traverses a pyramidal box as shown in the illustration, this being divided into two compartments by a partition reaching nearly to the top of the box. The pulp enters at the side opposite to the partition and a stream of clear water, entering from the bottom and rising on the same side of the partition, carries all the pulp well over the edge of it and thus under the drum. The magnetic particles are drawn out of the water by the action of the magnets and against the revolving drum. With a jigging motion caused by the alternating polarity of the magnets, they are carried to the edge of the magnetic field, where they are thrown off by the speed at which the drum revolves. The remainder of the pulp drops down on the other side of the partition and is carried off by the stream of water through the waste outlet. The middlings, consisting of particles partly magnetite and partly

gangue, are drawn to the surface of the water, and are discharged at the further end of the box. The capacity of this separator, with ore running about 40 per cent of iron, is approximately 100 tons of crude ore in 24 hours. The power required for the magnets is from 4 to 5 amperes at 110 volts, and about one electrical horsepower is required to drive the drums.

From the separator, the heads are delivered to the dewaterizer, a deep scoop hung in trunnions and given a bumping motion by a tooth-wheel. The farther edge of the scoop is the lower, letting the water overflow. When the scoop is filled, the pulp stream is diverted to another by a by-pass launder, and the first one, which contains about one ton, is emptied by a simple device with chains which loosen the sticky concentrate from the scoop bottom and deliver it to some transporting means carrying it over to the briquetting furnaces. The concentrates then contain only 6 to 8 per cent of water, just the right amount of moisture for briquetting.

As can be understood from this description, the general outlay of a Grondal separating plant is very simple. There are no screening apparatus and no rolls. When they are compared with the dry magnetic plants of this country, the difference is particularly remarkable on account not only of the simplicity of the outlay, with its lower first cost and running cost, but also of the absolute freedom from dust and the consequent cleanliness which characterize the Grondal plants.

The capacity of a one-unit plant, consisting of one ball mill, one slime box, and one or two separators, depends to a great extent on the condition of the ore. The capacity of the ball mill generally determines the capacity of the unit. It varies, as has been said, between 50 tons and 110 tons per 24 hours, according to the resistance against grinding which the pieces of ore offer in the mill, and the fineness to which they have to be ground. A plant treating 1,000 tons per 24 hours would need perhaps 10 units in parallel.

The quality of the product differs according to the character of the ore. The practice in Sweden is tending toward still finer grinding in order to produce cleaner products. In some recently erected plants, the ore from the ball mill is passed over a double separator in such a way that it is first fed on a separator of so strong magnetic force that it attracts all the magnetic particles, thus giving clean tailings and first concentrates, the latter to be carried to a weaker separator which separates the particles richer in magnetite from the poorer ones, middlings, which are returned to the ball mill for regrinding. The concentrates thus produced contain in average 63 per cent of iron. Sometimes it has been found desirable to produce still richer concentrates. This is gained by fine grinding the concentrates thus obtained in tube mills to 40 mesh or less and re-treating them on a second set of separators, which produce heads with 69 to 71 per cent iron. Simultaneously with the finer grinding of the concentrates, there was introduced at some works, where the ore showed fitness, a magnetic cobbing of the ore coming from the first breaker in order to eliminate at once the pure rock pieces, the feeding of which into the ball mills and the separators was undesirable.

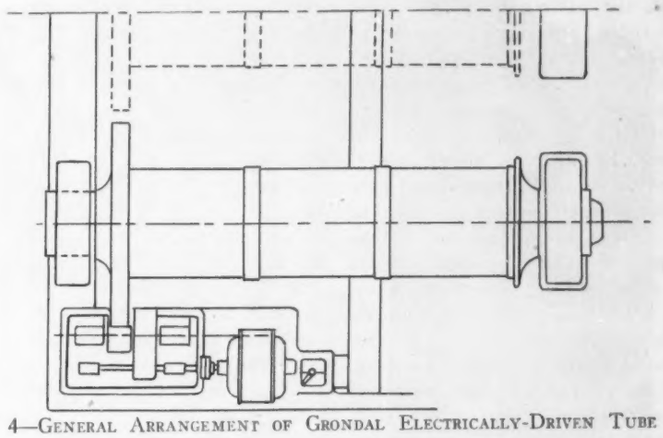


FIG. 4—GENERAL ARRANGEMENT OF GRONDAL ELECTRICALLY-DRIVEN TUBE MILL.

In the last few years, the magnetic separating plants have thus lost some of their original simplicity, while they have gained in efficiency. They are still a great deal simpler than the ordinary wet jigging mills or the dry magnetic concentrating mills.

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**Buffalo Foundrymen.**—The Foundrymen's division of the Employers' Association of Buffalo has selected the following officers for 1909: William H. Barr, president; Henry D. Miles, vice president; treasurer, George M. Trefts; Edward Kener Jr., William T. Tomez and E. T. Felthousen, executive committee. John E. Gorss is secretary. The association has offices in Ellicott Square. Foundrymen in the Buffalo district report the general business outlook good and labor conditions satisfactory. Practically all foundry work done in this district is on an open shop basis.

## PROFIT SHARING.[1]

BY WM. LODGE.

The plan about which I am going to speak is that of profit sharing There have been many attempts at what is known as profit sharing, but none so far as I know, have made the matter sufficiently definite to the workman to enable him to know day by day, even hour by hour, just what he is earning. Such plans are usually based upon the general earnings of the company, which are found after the books are balanced, whether quarterly, half yearly, or yearly, and then a given percentage of a man's wages is the reward for his services, additional to his regular pay. I have never understood that under the best example of this, which I believe is said to be the one of the Proctor & Gamble Co., that any great sum of money is given. But in the plan I am about to propose we should like it to reach a point where the workman will get at least 50 per cent more than his wages, and if he doubles them, we shall be just as delighted to pay them as we now pay regular wages.

Let us understand that in general business operations, if no profits are made, no dividends can be paid, and if any manufacturing institution finds its goods costing more than the sum of the labor, the material and the total expense, then it is making a loss, and it is such conditions that bring about failures. Consequently, conditions which we are about to set forth are based upon a system of doing work which insures a sufficient profit to pay all expenses, even if we incur some additional ones, and the same ratio of earning may continue whether times are dull or whether times are good, because the time limit for a job, hav-

[1]Address delivered to the foremen of The Lodge & Shipley Machine Tool Co., Cincinnati.

ing been fixed, the workman earns a fixed rate plus a premium exactly in proportion to the time he takes to produce the job, and he is not subject to any possibility of a reduction of his hourly rate of wages, which might otherwise take place in dull times. Of course his total earning, both wages and premium, during such dull period, would be affected directly in proportion to the total number of hours the shop operated.

I also want to call attention to the fact that in all systems of either piece work or premium system, nothing has ever been attempted, in machine making, in the way of a reward in addition to his wages, to the non-producer. By the non-producer we usually have in mind those employed in the cost department, the drawing department, the pattern department and the tool room. There is also employed about a large factory a number of men who do laboring, and such workers as cannot be classed among the producers. These, for instance, are the carpenters, blacksmiths, sweepers, the men who move work from one department to another, and a number of others, making up quite a percentage of the payroll. Our plan contemplates giving a reward or bonus to these various departments and miscellaneous jobs, based upon the saving effected by them, as compared with the cost of similar work in a previous year and before the establishment of this plan.

Now for the plan. You are all aware that we are today operating on what is known as the premium plan with a greater part of our productive labor. Up to date we have never put into force what I should term a thoroughly good system of reward for the foremen, and yet we want the foremen all to participate in the benefits to be obtained from this system, and in order that they may do so, we propose to give the foremen of each lot of men a bonus of 5 cents per hour for every hour saved by each man over the time allowed, and you are all aware that this constitutes a great many hours even at the present time. You are also aware that there are certain operatives who lose out on the time allowance, and yet it is believed, and been demonstrated many times, that every time allowance is a just and fair allowance for the piece to which it applies.

In order to make the inducement very attractive to each of the foremen, we have decided that we will give them 5 cents per hour for all the hours which are now being gained, by the men in their department, and which are already an established fact. This appears to be simply a present to the foremen, which it virtually is, and therefore we have come to the conclusion that it is only fair that we set against this allowance a charge or deduction of 20 cents per hour for each hour lost by these men. This we believe will at once show the need to the foremen of concentrating a sufficient amount of attention on the job and the man as to eliminate every lost time job, we hope, within the first month.

You will note that because of the charge against the foremen of 20 cents per hour, very little earning is made by the foremen in December. Let us now suppose that the lost time jobs have all been eliminated and that these men have begun to gain hours, and that they will probably reach as great a number of hours of saving as the men who formerly made good gains, and let us suppose further that we do reach a point which I believe will be an average saving of five hours per day. There would then be for distribution to the men $85,470, and for distribution to the foremen $38,850.

It is the intention to compute this so that it shall be paid about the first day of every month, or possibly the last day of every month.

Under these conditions we shall have the best paid establishment possibly in the world, certainly in this country, for our men and for our foremen, and under a system of profit sharing that will leave a sufficient amount of additional production to give to the company a portion of the rewards that we are giving to the men and the foremen. There will be no occasion at any time to cut premium prices, no matter how much is earned, but we do hold in reserve the right to regulate certain pieces of work by placing some of the very high earnings to the benefit of those jobs whose earnings do not show up well. This, however, will be very carefully investigated before being done, and will be done with the consent of all the parties concerned.

There is another feature which may call for careful attention, and that is changing of methods of doing work, or the altering of design, which may call for either more hours or less hours, all of which we shall be very glad to take up with the parties in interest. You may be sure that every such case will be dealt with on the fairest possible lines, and will not be put into force until pronounced entirely satisfactory by the parties involved.

Now as to the non-productive departments. No attempt has been made, so far as we know, to place these departments on a basis that would give them as favorable a reward over and above their wages, for efficient work, as the premium workers obtain. It is the opinion of the officers of this company that the non-producers should as nearly as possible be placed upon the same premium plan as the producers, and we therefore propose to compare the cost of these several departments with their cost in a certain previous year, and when their percentage of cost per dollar of output decreases so as to warrant it, pay such departments a premium over and above their wages, in proportion to the decrease in cost as above stated. For example let us suppose that the output of a factory was $500,000 per annum, and that the cost of one of these departments was, say $5,000 per annum. Let us now suppose that the output of a factory is increased up to the point where it is doubled, but that the non-productive department has not doubled its expense or number of men, and yet it has continued to perform all the work required of it during the year. Should this be the case the same proportion of premium would be due to these departments, and properly so, that is given to the premium worker, taking into consideration their percentage of saving, and the division would be made in ratio per hour to the ratio of the hourly wage of men employed in that department, and this would include foremen, workmen and boys. And the company sees no reason why the reward may not reach a close approximation of what is earned in the factory proper by the producers, and if we find it so it shall cheerfully be paid.

It is intended that this system shall apply to the cost department, the drawing room, the pattern department and the tool room department, and I am sure if it works out as well as it may, no one will be more delighted than the officers of this company. There is no doubt but that causes of friction will arise, but you will at all times find us not only ready to discuss them, but willing to do so, and also to go into the cause and effect by taking the actual results to the hours, and discussing the subject until a suitable conclusion has been arrived at.

This plan is so designed that it is the intention that in its operation 50 per cent of the time saved will go to the credit of the workmen, 25 per cent will accrue to the foremen, and 25 per cent will be given to the non-productive force.

# A PROCESS OF MAKING GAS FROM OIL

## Description of the Method and Apparatus Which Utilizes Residuum Oil, Hitherto a Waste Product

By Walter C. Willard.

There has been developed, and is in operation at the present time, a process for the manufacture of fuel gas from oil at a cost, it is claimed, of from 12½ to 24 cents per 1,000 feet of gas. In localities where oil is quite cheap, it is said to be possible to make the gas for 7 cents per 1,000 cubic feet.

The process consists essentially in mixing oil with air and vaporizing and gasifying the mixture, resulting in a perfectly fixed, colorless gas of from 700 to 1,220 B. T. U. per cubic foot, and a candle power from 10 to 20 according to conditions and grades of oil used.

It is claimed that there is positively no deposit left in any part of the apparatus, except a small percentage of tar which falls in the settling tank. No ash and no free carbon or coke can be found anywhere in the system.

The gas when burnt in an ordinary mantle burner, burns with no smoke and gives a clear white light from the mantle. It can be used wherever natural gas can, for lighting, heating or power. When burned in an open gas heater, the flame is a clear blue with no perceptible traces of smoke. When used in an internal combustion engine it is claimed that it burns perfectly clean, leaving no tar or acid formations which might be detrimental to the operation of the engine.

Judging from the appearance and odor of the exhaust from an engine operating on this gas, there is little doubt that the above claim is well grounded.

The process is the outcome of extensive experimenting covering a period of approximately 15 years. The inventor tried many combinations of oil and air supply nozzles as well as forms and sizes of the vaporizing retorts.

A company has been organized to act as sole selling agent, known as the Smokeless Heat & Power Co., of Cleveland. This company claims that it can make gas, of 700 B. T. U. per cubic foot, in any part of the country for 25 cents per 1,000 feet.

Aside from the standpoint of economy in fuel cost, the process is so extremely simple and positive in its action, that very little attendance is necessary to insure perfect results.

The operation is roughly this: An air and fuel mixing nozzle is made to deliver a mixture into an iron burner, where it is heated, and thus gasified, and led out through the small holes in the burner where combustion takes place. This burner supplies the heat necessary to vaporize the oil fed to the retorts in which the gas is made. One nozzle, like that used in the burner, furnishes a mixture of oil and air to each pair of retorts. One burner furnishes sufficient heat to operate eight pairs of these retorts.

Fig. 1 shows the front of a 10-retort outfit, with the iron door removed, as used in a demonstration plant at Lima, O. The burner is situated below in a fire box and the retorts are arranged above in pairs, side by side.

Oil enters the lower one at the bottom and gas leaves from the top of the upper one of each pair, where it is collected in a manifold and carried over through two settling tanks, in this case, and piped to a storage tank. Fig. 2 shows the rear ends with the pipe connections between the retorts of each pair. This end is also closed by a door when in operation. The 10-retort outfit, as it stands, is 5 feet wide, 4 feet deep and 7 feet high over all.

Fig. 3 is a sectional drawing of one

Fig. 1—Front View of Oil Gas Producer, Having a Capacity of 2,200 Cubic Feet Per Hour. Measures 4 x 5 Feet on the Floor and is 7 Feet High.

of the nozzles. Oil is fed through the upper needle valve and air through the lower one. Both air and oil are under from 20 to 30 pounds pressure. The hole through which the mixture passes is ordinarily 3/16 inch diameter and the air hole ⅛ inch. A sight feed glass is provided so as to check up on the flow of oil.

Fig. 4 shows the burner with nozzle attached. It is an iron casting cored so as to form eight compartments running the full length of the burner. These compartments are arranged so that the mixture enters the bottom center one (1, Fig 5), passes the length of the burner and enters 2, back to the front end, entering the two compartments marked 3, back and down into 4, forward and into 5, whence it passes out through a series of holes marked 0 in Figs. 4 and 5. Here it is ignited, being supplied with the necessary air from the drafts and holes in the fire box. The holes at the side of the burner are arranged so as to direct the gases downward for the purpose of keeping the burner hot. The two upper rows of holes direct the gas upward against and between the retorts, which are placed two or three inches apart in the frame so as to present as much surface to the heat as possible.

Fig. 6 is a photograph of one of the retorts with the nozzle in place. The interior construction is shown in Fig. 7, and is very similar to that of the burner itself. After the mixture passes through the various channels of the lower retort it is passed through similar channels in the upper one. By the time it has passed through these retorts the oil has been thoroughly gasified and no raw oil is collected in the settling tank unless an excess is fed through the nozzle. When this happens, no harm is done as the surplus oil simply settles in the tank, where it is drawn off and used again.

To start the apparatus it is necessary only to heat the burner to a dull red, admit the oil and air to it and allow the retorts to reach about the same temperature, when the oil and air are admitted to the retorts and the gas is at once generated.

A conservative estimate of the capacity of this 10-retort outfit is 2,000 cubic feet per hour using four gallons of fuel oil per 1,000 feet. This quantity includes that used both in the retorts and in the burner.

This oil may be bought at an average cost of about 2½ cents per gallon. It is practically useless for any other purpose and is what is commonly used for sprinkling roads throughout the country. It is otherwise known as residuum oil. It is also claimed that either crude oil or some of the lighter distillates may be used with equal success.

The application of this process is practically universal, since special burners may be built to operate directly under a steam boiler. Fig. 8 shows an installation for making steam. It is only necessary to remove the grate bars, set in the burner on its supports, and fill in with loose fire brick as indicated. By this means the heat is spread to cover as large an area as desired and no one point is appreciably hotter than any other. This overcomes one of the greatest drawbacks to the use of oil for fuel according to former practice.

Heretofore it has been a problem to dissipate the heat and still maintain perfect combustion. With this system, if the oil and drafts are properly adjusted, there is practically no flame visible, simply a steady heat making all within the fire box show up at practically one color. No stack is required, simply a flue to carry off the products of combustion.

No experiments have thus far been carried on to ascertain the maximum temperatures which may be obtained by the burners. During tests made at The Libbey Glass Co.'s plant it was stated that a temperature of 2,900 degrees Fahr. was maintained in the glory hole. There is no difficulty at all in getting the retorts hot enough to melt them down, as was shown at

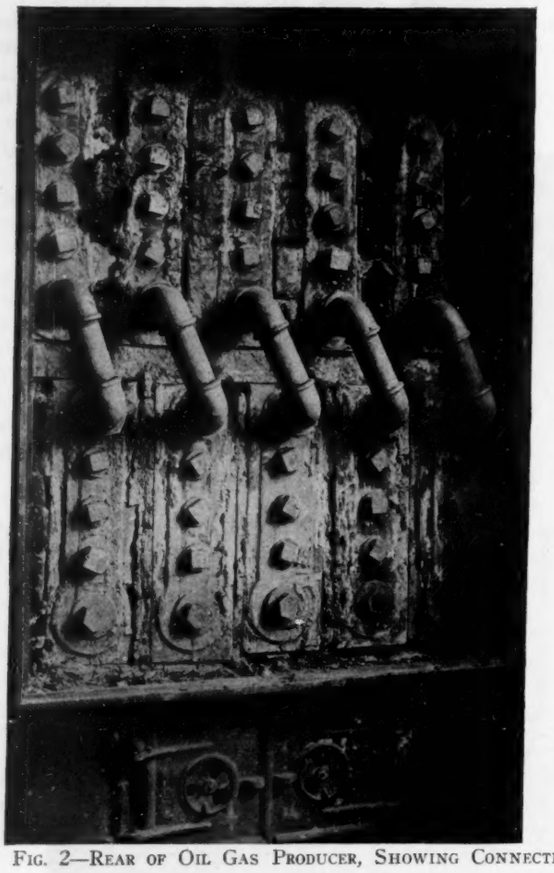

FIG. 2—REAR OF OIL GAS PRODUCER, SHOWING CONNECTIONS BETWEEN THE RETORTS.

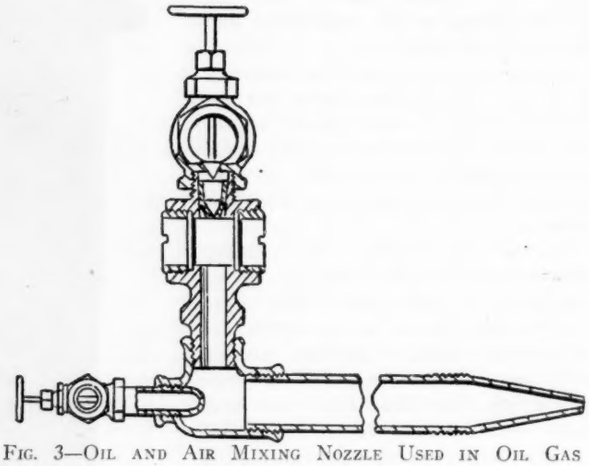

FIG. 3—OIL AND AIR MIXING NOZZLE USED IN OIL GAS PRODUCERS AND BURNERS.

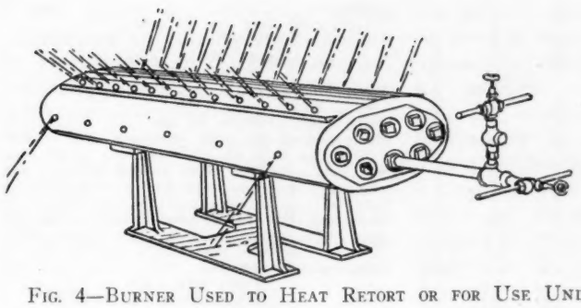

FIG. 4—BURNER USED TO HEAT RETORT OR FOR USE UNDER A STEAM BOILER.

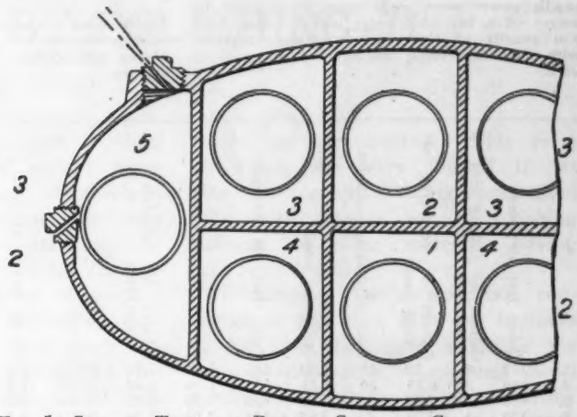


FIG. 5—SECTION THROUGH BURNER SHOWING COMPARTMENTS.

Lima during the time they were experimenting with the process.

Figs. 9, 10 and 11 show a 32-retort outfit which will be in operation before this article appears.

There are appended herewith reports of tests made by disinterested parties. In the Libbey Glass Co.'s tests there was charged against the process every cost that could reasonably be placed against it. Therefore, the report doubtless shows a sufficiently high cost, and may be in excess of the true cost.

The outfit at the glass works was a 10-retort machine and inasmuch as the labor charged could easily operate a plant capable of making 1,000,000 cubic feet per day, instead of 60,000, and the economy is naturally much greater in the larger plant, it would be possible to produce this gas under similar conditions for considerably less money than is shown by this test.

Regarding the adaptation of this process for use under a steam boiler there have been but few reliable tests made by the sales company. These few show, however, that by using a special burner, it is possible to evaporate from 17 to 20 pounds of water per pound of fuel oil used. In one instance it is reported that 23.82 pounds of water were evaporated by a pound of oil. We are not in a position to say whether or not this statement can be substantiated.

A recent test gave an evaporation of 15.82 pounds of water per pound of oil as against 9.442 pounds per pound of Kanawha coal in the same boiler. At this rate one gallon of oil will evaporate 115.8 pounds of water and 162.7 gallons of oil would be equal to one ton of the above coal.

It might be mentioned in the above test that it was a preliminary one and the conditions of draft and many other factors were not the best, but, even at that, it shows that there are great possibilities for the use of this system for generating steam.

### Reports of Tests.

WILLIAM PATE JR., B. S.
CHEMIST
316 CITY HALL.
Cleveland, O., Nov. 25, 1908.

Chemical Analysis
Physical Tests
Inspection of all materials of construction
Smokeless Heat & Power Co.,
City.

GENTLEMEN:—I beg to hand you report of results of tests and examinations made by me, upon gas produced at Lima Gas Engine Co.'s plant from a residuum oil and with an oil gas generator.

On Tuesday, Nov. 17, I visited the plant and took a sample of the gas as it is ordinarily made for their own use in running a gas engine, with which the plant is operated. The plant is also lighted with this gas.

An analysis of the sample taken showed the following result:

| | Per cent |
|---|---|
| Hydrocarbon vapors | 15.55 |
| Carbon dioxide | 1.70 |
| Heavy hydrocarbon | 1.05 |
| Oxygen | 0.20 |
| Carbon monoxide | 2.60 |
| Methane | 23.04 |
| Hydrogen | 2.90 |
| Nitrogen | 52.96 |

On Nov. 21 and 22, four different gases were made under my observation. Tests for

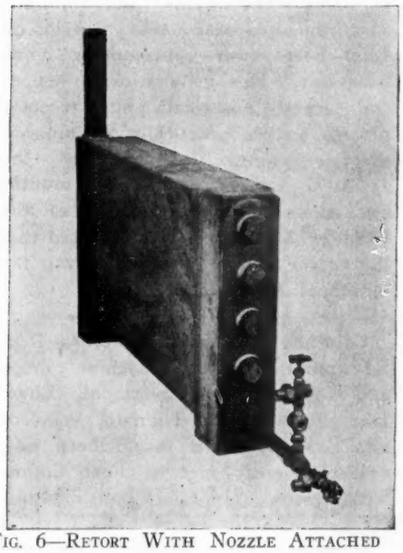

FIG. 6—RETORT WITH NOZZLE ATTACHED AS USED IN THIS PROCESS.

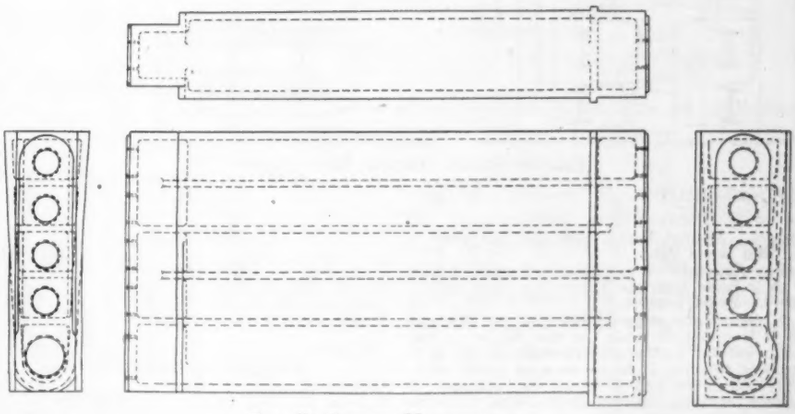

FIG. 7—RETORT VAPORIZER.

candle power were made upon these gases by means of a bar photometer and I below hand you results of these determinations, together with data concerning amounts of air and oil used.

| | Per cent. |
|---|---|
| Hydrocarbon vapors | 17.90 |
| Carbon dioxide | 1.40 |
| Heavy hydrocarbon | 0.80 |
| Oxygen | 0.70 |

| | Cubic feet air used. | Gallons oil passing into retort. | Gallons oil recovered settling tanks. | Time of making, minutes. | Gallons oil used. | Cubic feet gas produced. | Gallons oil used in burner. | Gallons oil calculated for 1,000 feet. | Specific gravity gas. | Candle power as read. | Candle power at 60F 30P. | Flow in burner, feet per hour. | Pressure at burner, inch. | Calculated candle power at 5 feet per hour. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 112 | 8 | 6.50 | 38 | 1.50 | 553 | 1.66 | 2.71 | 0.947 | 9.3 | 9.8 | 2.46 | 0.8 | 19.9 |
| 2. | 240 | 2 | 0.75 | 40 | 1.25 | 570 | 1.80 | 2.20 | 0.999 | 7.0 | 7.4 | 3.62 | 0.5 | 10.2 |
| 3. | 150 | 4 | 2.00 | 26 | 2.00 | 635 | 1.75 | 3.15 | 0.974 | 8.3 | 8.6 | 4.20 | 0.5 | 10.1 |
| 4. | 130 | 3 | 1.00 | 22 | 2.00 | 504 | 1.00 | 3.96 | 0.974 | 8.5 | 8.8 | 4.50 | 0.1 | 9.7 |
| | | | | | | | | Mixture | | 6.9 | 7.3 | 3.67 | 0.5 | 9.9 |

I have reported, in the last column, calculated candle power at a flow of five feet per hour, although it is impossible to burn this gas at that rate of flow in an ordinary chimney.

These candle power determinations are the maximum obtainable after different adjustments of flow and pressure at the burner.

Gas No. 1 was made with a maximum amount of oil passing into the retorts, but it will be seen that so much of this oil was recovered in the settling tanks that the resulting gas contains even less of the broken up oil than that which is ordinarily made and while a slightly higher candle power is obtainable, due undoubtedly to a higher percentage of hydrocarbon vapors, I think this mixture should not be considered.

Gas No. 2 is obviously the cheapest gas, less oil and more air being used, but here the candle power is dropped and the gravity increased.

Gas No. 4 was made on adjustments of air and oil, as the gas is made and used at the plant, and while the amount of oil per 1,000 cubic feet is the largest, the candle power is better than the two others and its advisability for fuel purposes is well demonstrated. Mantles burned with this gas show a brilliant white light.

The "mixture" is a mixture of gases 1 and 2 as it came from the holder, but these results are hardly of interest.

I respectfully suggest that you use the gas as it is ordinarily made, or like No. 4, as the basic gas for further experimentation. It is a problem to bring it up to ordinary candle power requirements and it would be necessary, I believe, to bring the gravity down in order to carry it about city mains, or else to carry a very high pressure.

A sample of the last gas was taken and analyzed with the following results.

| | |
|---|---|
| Carbon monoxide | 4.00 |
| Methane | 25.30 |
| Hydrogen | 2.70 |
| Nitrogen | 47.20 |

This is a somewhat better gas than was taken at the plant on Tuesday and serves to show that with careful adjustment and attention, air pressure upon the oil going into retorts being kept constant, valves constant, etc., a practically constant gas can be obtained and the greatest availability for heating and lighting purposes obtained.

Yours truly,
WILLIAM PATE,
*Chemist.*

## The Libbey Glass Co. Chemist's Report.

Toledo, O., Dec. 17, 1908.

The Smokeless Heat & Power Co.,
Cleveland, O.

GENTLEMEN:—Below you will find briefly summarized the results of a run made by your gas producer at this plant, the gas being used in a glory hole.

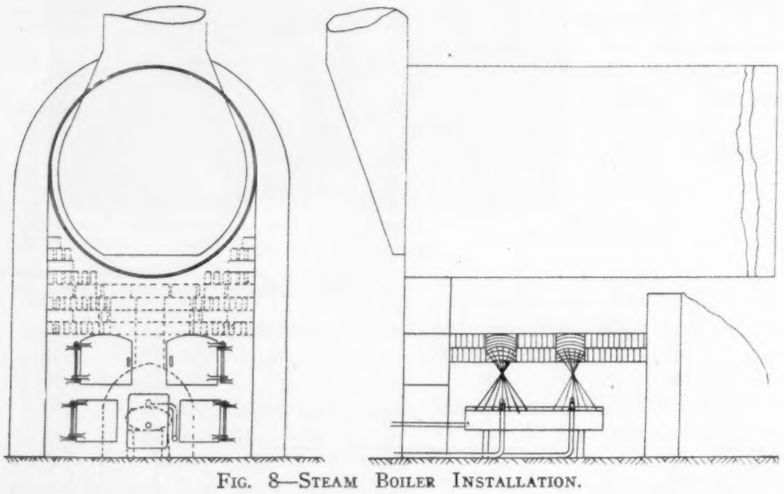

FIG. 8—STEAM BOILER INSTALLATION.

GAS MADE.

| | Cubic feet. |
|---|---|
| First day, 24 hours | 33,733 |
| Second day, 24 hours | 29,197 |
| Third day, 24 hours | 28,960 |
| Fourth day, 24 hours | 25,630 |
| Total | 117,520 |

AMOUNT OF OIL USED.

| | |
|---|---|
| Gallons oil used in retorts | 687.33 |
| Gallons oil used as fuel to gasify the above 687.33 | 241.31 |
| Gallons oil used to produce 117,520 cubic feet of gas | 928.64 |

The above gas ran about 750 B. T. U. and 15 candle power per cubic foot.

COST OF GAS (117,520).

| | |
|---|---|
| 928.64 gallons oil at 2½ cents | $23.21 |
| 100,000 cubic feet of air | 1.00 |
| Labor based upon one man running four sets | 4.00 |
| Total | $28.21 |

1,000 cubic feet cost 24 cents.

COMPARATIVE COST OF RUNNING GLORY HOLE FOR 24 HOURS.

| | |
|---|---|
| Using Lima special burner for oil direct, oil at 2½ | $ 3.16 |
| Using Lima producer oil gas | 7.05 |
| Using natural gas at 31 cents per 1,000. | 10.65 |

From the total of 928.64 gallons of oil used we found a residue of 82 gallons light tar and nine gallons of a very heavy variety. The light tar may in some cases be returned to oil stock, but its practice should not be encouraged. The operation of the glory hole, kiln, ice and lehr was successfully carried out in actual working practice.

Yours very truly,
THE LIBBEY GLASS CO.,
HENRY W. HESS, *Chemist.*

WILLIAM PATE JR., B. S.
CHEMIST.
316 CITY HALL.
Cleveland, O., Dec. 22, 1908.

The Smokless Heat & Power Co.,
City.

GENTLEMEN:—I hand you herewith result of tests made upon samples of gas received from Lima, yesterday, and labeled as noted.

| | B. T. U. per cubic feet.* |
|---|---|
| Lima fuel oil | 876.7 |
| Lima crude oil | 1,221.5 |
| Pennsylvania fuel oil | 744.6 |
| Pennsylvania crude oil | 986.0 |

*Uncorrected for temperature and pressure. These results are unusually high.

Yours very truly,
WILLIAM PATE,
*Chemist.*

**Large Electrical Unit.**—The C. & G. Cooper Co., Mt. Vernon, O., has been awarded a contract by the Tennessee Coal, Iron & Railroad Co. for a 3,000-horsepower cross-compound Corliss steam engine which will be installed in its electric power house at Ensley, Ala. The cylinder dimensions are 42 and 78 x 54 inches. The engine is arranged for direct driving a 2,500-kilovolt-ampere Crocker-Wheeler alternator. The unit will operate at 83½ revolutions per minute, and be capable of developing 4,500 horsepower continuously when necessary. This installation is one of the largest electrical units recently placed, and is practically a duplicate of an engine installed by the C. & G. Cooper Co. several months ago at the Duquesne works of the Carnegie Steel Co. It is expected that the engine will be installed during the month of March.

**Colorado Foundries Combine.**—Representatives of the machine shops and foundries of Longmont, Loveland, Fort Collins, Tinmath, Windsor and Greeley, towns in northern Colorado, recently met at Fort Collins with a view to possible consolidation. A committee, including E. S. Carl, of Longmont, and Messrs. Carr and Cope, of Greeley, was appointed to work out the details of consolidation.

# FINISHING METALS BY POLISHING—II[1]

By Bradford H. Divine.[2]

The various processes in polishing metals and other materials require as much nicety in designing and adjusting the wheels to the work as tools for any other branch of metal working. Most of the common forms of polishing wheels in use are very inefficient for one reason or another, chiefly owing to lack of cutting power or of just the proper resiliency needed to give the required frictional contact.

The leather covered wood wheel is the most common type of polishing wheel in use. It is extremely limited in its scope, being practically confined to the wooden block covered with either common leather or walrus hide, occasionally with a strip of felt, each material being intended to give a certain cushion needed for certain work. Each of these materials, however, and this form of wheel in general, has several serious drawbacks, the principal one of which is its inability to give an absolutely uniform cushion and its lack of adaptability to the varying requirements of the wide range of work.

To overcome these difficulties various types of wheels have been designed, the best of which had the leather cut in rectangles, glued into a ring and placed on a wood center with the leather pieces standing on edge. This form of wheel was a distinct step in advance, but had many serious faults. The chief of these was a lack of strength, the wooden center being channeled to receive the ring of leather, the pieces of which were glued together for additional support. Sufficient strength, however, could not be secured to withstand the strain of polishing work and sooner or later the wheel went to pieces, oftentimes with serious results to the operator. This form of wheel was very limited in its scope on account of being constructed only with leather for a polishing cushion, no other materials having been successful.

It remained for a man not connected in any way with the business to hit upon the right principle for the construction of a polishing wheel combining lasting qualities, cutting power, elasticity and adaptability to every requirement of work.

The construction adopted permits the use of practically any material in the polishing cushion, leather of various kinds, canvas, felt, rubber, cork, paper, walrus hide or any other material suitable to the purpose. The wheel is constructed upon the principle of compression and reaction. The work for which a wheel is required being known, the amount and character of material necessary for the ring of "cushion" is determined, cut to proper size and formed into a ring larger in diameter than the finished wheel is to be. This ring is then compressed to the proper size, tooled up to fit annular groves in the steel side plates by which it is held, the metal hub inserted in the plates and the whole assembled, turned to finished size in an engine lathe and finished up for use.

The great range of available ma-

[1]The first article of this series appeared in The Iron Trade Review of Jan. 28, 1909.
[2]President Divine Bros. Co., Utica, N. Y.

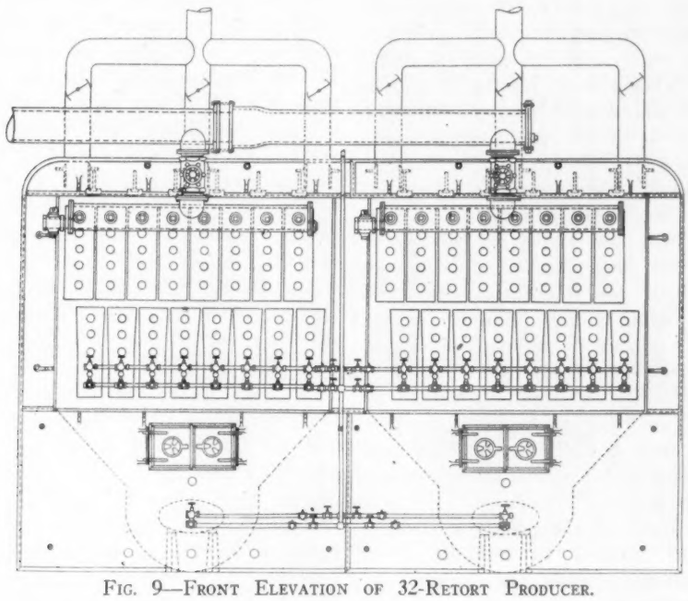

Fig. 9—Front Elevation of 32-Retort Producer.

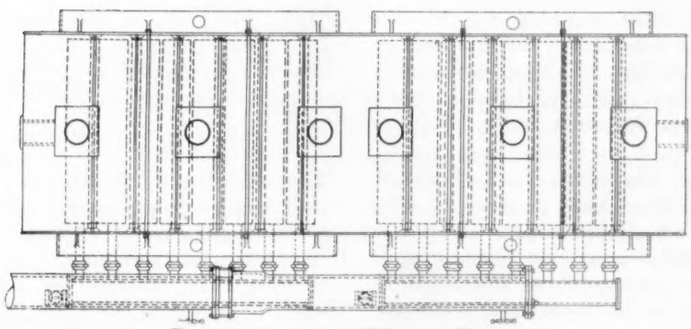

Fig. 11—Plan of 32-Retort Producer.

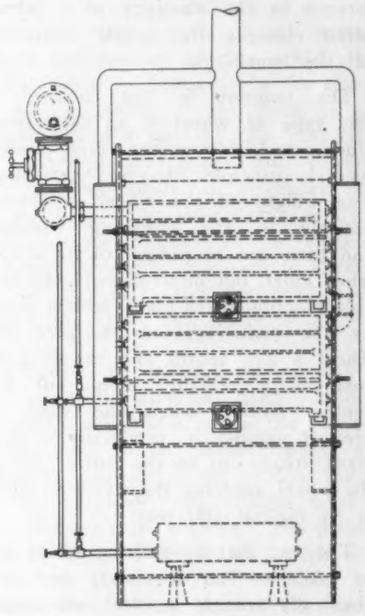

Fig. 10—Side Elevation of 32-Retort Producer.

terials for the "cushion" and the accurate regulation of the quantities and amount of compression each will take, permits an endless variety of wheels to be produced, each of which has its special merits for some particular class of work. The great bulk of wheels of this type are made from leather or canvas, which, in the various styles and densities, cover the requirements of most all polishing work, although other materials are often used for the "cushion" to suit individual ideas and whims of users.

The beauty of this type of wheel is the closeness with which it can be fitted to any working methods and the delicate touch or contact of the wheel to the work, giving just the right frictional or abrasive contact to remove the correct amount of metal with the least exertion of the wheel and the operator. It is one thing to grind or polish the scale from a forging taken direct from the hammer, but to remove the right amount from a high quality table knife blade on its finishing operation is quite another, and one grade difference in the elasticity of a wheel often changes the whole character of the work.

The reaction in the cushion of this type of wheel is an interesting study, and forms the real fundamental principle of good polishing. The weight of the wheel is almost entirely in the polishing cushion, and little can be judged of its action when quiet, but under speed considerable reaction takes place, which, aided by the centrifugal stress, give the wheel a live action and the ring of cushions a certain amount of eccentric motion when the work is pressed against it, producing a constant, steady cut on the entire face of the wheel, enabling the wheel to work at its highest efficiency.

The fact that a polishing wheel can be made to run absolutely and mechanically true is a great advantage, as it consumes practically the entire amount of emery on the face in productive work, and also turns out faster and with a smoother surface. Any experienced polisher knows that a wheel even slightly untrue wears through the emery dressing in one or more of the high spots first, and to continue the wheel in use, means its ruin and the burning of the work. Also, the bulk of the emery on the wheel must be removed and lost, and as these two articles are the greatest items of expense and consumption in the polishing room the waste is very great.

In wheels of this type presenting the end grain of the leather or fabric to the work, the glue gets a much better seat or hold than on the flat side of the material, and lasts much longer. The glue penetrates the pores of the material to a considerable depth and forms a setting for the emery much like a diamond in a ring, whereas on the flat side of the material, as on a wood wheel, the glue does not penetrate but lays on the surface in a film, having little holding power to resist the strain of the work and is rapidly torn off. A wheel of the type above discussed with the material on edge, ordinarily holds the dressing at least three times as long as an ordinary wheel, and in one line of business using automatic polishing machines, some very careful tests were recently made betwen wood wheels covered with leather and walrus, and canvas wheels with the center plates of steel and 2-inch depth of canvas on edge in the "cushion." The tests covered a period of several months in all sorts of weather conditions, the same machines and operators being used throughout and all conditions outside the wheels being the same. At the conclusion the wood wheels had averaged a life to each dressing of one and one-half days, while the canvas wheels averaged 12 to 14 days.

Polishing wheels of the construction we are describing make it possible to use automatic polishing machines, as they eliminate the sense of feel or touch necessary in hand work, owing to the difference in the ordinary wheels in action. Since the improved construction uses only materials which are not affected by climate conditions or varying temperatures, they can be exactly duplicated on repeat orders, insuring absolutely uniform working conditions.

The depth of the polishing cushion and the method of holding it in steel plates permits the forming of the cushion to various shapes as may be desired in following the outline of any other piece on which work is being done, and a uniform and accurate outline. This applies equally to convex, concave, bevel, pointed, overhung, side work and a variety of shapes.

These wheels have great strength and are often used in place of solid emery wheels by mixing emery and glue into a paste and building up a head on the wheel one-half to three-quarters of an inch thick, a flexible glue being used and the "cushion" of the wheels beneath it having the required "give," enabling the wheel to run true, without chatter or the vibration of a solid emery wheel and to accurately follow a form or outline.

A polishing wheel running absolutely true and smooth naturally enables an operator to produce not only better work but more of it, as it does not tire a man, but relieves the constant strain on his arms and shoulders, keeps him in better shape and produces more work in a given time. Furthermore, as each operation or stroke of the wheel leaves the work in better condition, it is possible to eliminate some operations.

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**A Remarkable Record.**—Emphasizing the exceptional record made as to the speed of erecting work, a booklet containing data on the new Chelsea piers in the North river, New York City, was issued by the McClintic-Marshall Construction Co., Pittsburg, and distributed at the annual meeting of the American Society of Civil Engineers held at New York, Jan. 20 and 21. On pier 59, the McClintic-Marshall company erected 2,447 tons of steel work in 5½ days, or an average of one ton a minute. In the three piers Nos. 57, 58 and 59, for which the company furnished and erected the steel work, there was a total of 10,500 tons of steel material used. Each pier is 118 feet 3 inches wide, center to center columns, 780 feet long and 41 feet 2⅜ inches high to truss. The width of the bulkhead is 48 feet 11 inches, center to center columns, and the length 1,126 feet 5 inches. The weight is 2,100 tons. The new piers were built under the supervision of the department of docks and ferries, and R. P. and J. H. Staats were the general contractors. The officials in charge were Allen N. Spooner, commissioner; G. W. Staniford, chief engineer; S. W. Hoage Jr., deputy chief engineer; J. J. Pemoff, assistant engineer in charge of erection; and R. T. Betts, assistant engineer in charge of design. The mill and shop inspection was by Emil Swenson. The booklet contains a number of progress views showing the development of the structures.

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The receivers of Milliken Bros. on Feb. 1 met the usual interest payment due on the company's bonds. The term of the receivers, under the last extension, runs through the current month.

# A GIANT TESTING MACHINE

## 10,000,000-Pound Hydraulic Compression Testing Machine, for the Structural Materials Testing Laboratories of the United States Geological Survey[1]

By Richard L. Humphrey.

There is being constructed for the structural materials testing laboratories, of the United States geological survey, by Tinius Olsen & Co., Philadelphia, Pa., a vertical compression testing machine of 10,000,000 pounds capacity. This machine, having a gross weight of over 200 tons and an extreme height above foundation of about 80 feet, is the largest ever constructed.

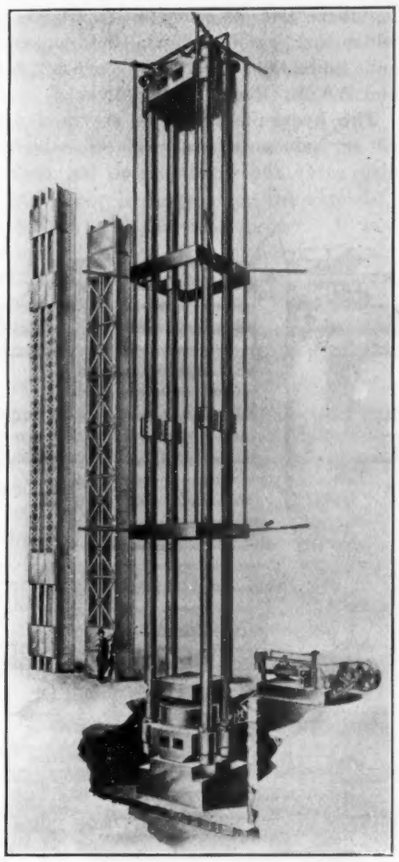
The machine was primarily acquired for the purpose of testing large blocks of stone made necessary by the study of the building stones of the country, as requested by the supervising architect. Inasmuch as it was deemed desirable to study the effect of flaws and defects of the various kinds in large blocks of natural stone, a machine of this capacity was determined upon. In order to care for a further request of the supervising architect, for data relative to the strength of structural columns of brick and concrete, as well as of structural steel, the original clearance between heads was increased from 25 to 65 feet. Already the need of this machine in the investigation of built-up structures is established through the urgent requests for its early completion.

Some idea of its size may be obtained from the accompanying illustration in which has been sketched one of the chords of the Quebec bridge which collapsed, and also a larger chord which was used in the Blackwell's island bridge. It is readily apparent that this machine is capable of testing built-up structures of even greater size than those referred to.

The following brief description has been prepared because of the interest which has been manifested, and in response to the frequent requests which have been made for information concerning the machine.

The machine is a large hydraulic press, with one adjustable head, and a weighing system for recording the loads developed in it by means of the triple plunger pump. It has a maximum clearance between heads of 65 feet; the clearance between the screws is a trifle over 6 feet, and the heads are 6 feet square.

The machine consists of a base containing the main cylinder with a sectional area of 2,000 square inches, upon which rests the lower platform or head which is provided with a ball and socket bearing. The upper head is adjustable over four vertical



10,000,000-Pound Compressive Testing Machine.—Quebec and Blackwells Island Bridge Girders Drawn to Scale Alongside.

screws 13½ inches in diameter and 72 feet, 2 inches long, by means of gearing operating four nuts with ball bearings upon which the head rests. The shafting operating this mechanism is connected with a variable-speed motor which operates the triple plunger pump which supplies the pressure to the main cylinder.

The weighing device consists of a set of standard "Olsen" levers upon which is weighed 1/80 of the total load on the main cylinder. This reduction is effected through the medium of a piston and diaphragm. The main cylinder has a diameter of 50 inches, and the smaller a diameter of 5 9/16 inches. The weighing beam is balanced by an automatically operated poise weight and is provided with a device for applying successive counterweights of 1,000,000 pounds. Each division on the dial is equivalent to 100 pound loads; the smaller sub-divisions are possible by means of an additional needle beam.

The power is applied by means of a 15-horsepower, 220-volt variable speed motor operating a triple plunger pump. The gearing operating the upper head is driven by the same motor.

The extreme length of the main screws necessitates splicing, which is accomplished as follows: In the center of the screws at the splice is a 3-inch threaded pin for the purpose of centering the upper and lower screws; this splice is strengthened by means of split sleeve nuts, which facilitates the removal of the sleeve nuts whenever it is necessary to lower the upper head; after the head has passed the splice the sleeve nuts are replaced.

In order to maintain a constant load a needle valve has been provided which will allow, when the pump is operated at its lowest speed, a sufficient quantity of oil to flow into the main cylinder to equalize whatever leakage there may be. The main cylinder has a vertical movement of 24 inches.

Some idea of the size of the machine may be obtained from a statement of the weight of its principal parts. The castings for the base and the top head weigh approximately 50,000 pounds each. Each main screw will weigh over 40,000 pounds. The lower platform weighs about 25,000 pounds, and the main cylinder 16,000 pounds. The top of the machine will be about 70 feet above the top of the floor, and the concrete foundation upon which the machine rests will be about 8 feet below the floor line.

[1]Published by permission of the director of the United States Geological Survey.

## NEW BLOOMING MILL MANIPULATOR.

The accompanying illustrations show the features of a new blooming mill manipulator which has been recently designed by Mackintosh, Hemphill & Co., Pittsburg, and on which patents have been applied for. In the development of this machine, two main considerations were kept in mind, viz.: to remove the working parts from underneath the table, where they are subject to excessive wear, due to scale, etc., falling upon them, and where they are also extremely difficult of access for repairs. The second idea kept in mind was to build a machine capable of handling all sizes of material, from 4 x 4-inch billets to 40 x 4-inch slabs. In certain classes of work, all the manipulations can be performed by a machine on one side of the mill only, although the arrangement shown in Fig. 1 where the manipulator is placed on both sides of the mill is preferable, especially for handling slabs and work of similar character.

Referring now to the drawings, the mechanism comprises four cast steel heads, A and AA, each of which is mounted on two tubular cast steel guide bars, B. The front ends of these bars are carried in bearings, C, these latter being cast integral with the table roller journal bearing caps, in order to support the heads as close as possible to the work. Similar bearings, CC, carry the rear ends of the guide bars in the manipulator frame. The heads are moved laterally across the table by means of the hydraulic cylinders, D, which operate the rock shafts, E, through links, F, and levers, G. On the rock shafts, E, there are keyed the levers, H, which are connected at their upper ends directly to moving heads, A and AA, by the cast steel links K.

The hydraulic cylinders are mounted on substantial base plates, which also carry the bearings for the rock shafts and guides, the former being also carried in bearings on the mill housing shoes. The base plates on each side of the table are tied together by bolts and separators.

To turn pieces of work over, the head, AA, is provided with depending T-shaped fingers, L. These slide in T-slots in the head and travel with the head, descend by gravity, and are raised by the hydraulic cylinder, M, through the link, N, and levers, P and R. On these levers are mounted the guide boxes, S, to carry the lifting beams, U. The lifting beams are connected to the depending fingers by links and pins, the lower pins passing through all of the depending fingers as well as through the links. The beams, U, are moved laterally by means of guide posts, V, which are secured to guide bars, B. This construction insures the lifting beams, U, moving uniform with the head, AA, and prevents the depending fingers from binding in the slots in the

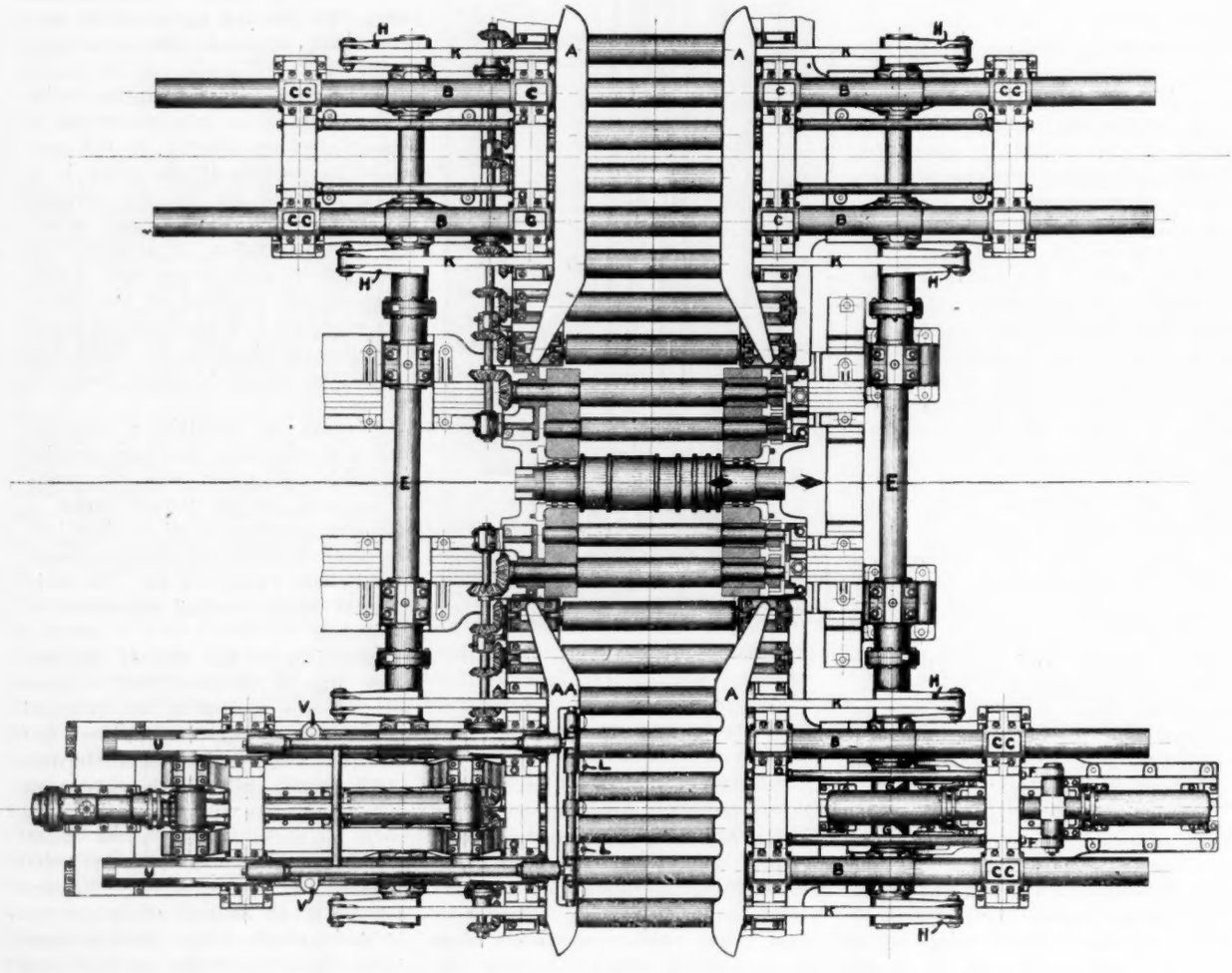



FIG. 1—PLAN OF NEW MACKINTOSH-HEMPHILL MANIPULATOR.

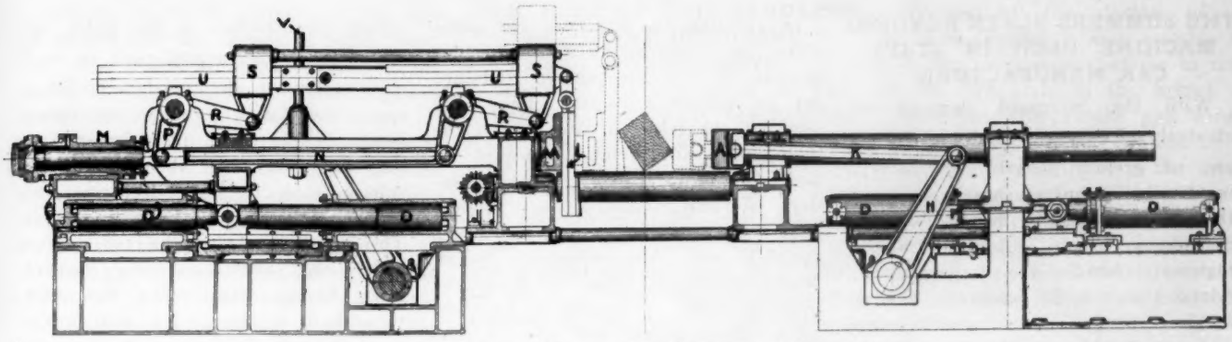


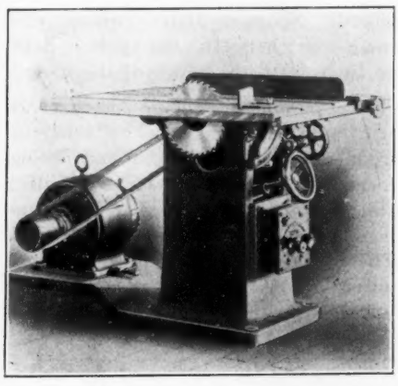
FIG. 2—ELEVATION OF MACKINTOSH-HEMPHILL MANIPULATOR.

head. This turning arrangement is shown on one head only. If necessary, however, it can be applied to all of the heads.

## A MOTOR DRIVEN TABLE SAW.

A tool for woodworking establishments which is to be especially commended on account of its convenience, and efficiency is the neat motor-driven table saw illustrated herewith. It is built by the Crescent Machine Co., Leetonia, Ohio.

The saw table proper and the saw itself are supported upon a pedestal which also furnishes a frame upon



CRESCENT MOTOR-DRIVEN TABLE SAW.

which the mechanism for adjusting the saw and table, and the starting rheostat are mounted.

This adjusting mechanism consists of means for tilting the table and raising or lowering the saw. The former is accomplished by means of a hand wheel whose shaft bears a worm, with a graduated brass scale and pointer to show exactly the amount the table is tilted, up to 45 degrees. By means of the other hand wheel the saw is adjustable in a vertical direction, making the machine adapted for cutting boards of different thickness up to 4 inch. The saw itself may be as large as 14 inches, but no larger.

The motor equipment consists of a 3¾-horsepower, totally enclosed Westinghouse type "R" motor and a starting rheostat. The motor is shunt-wound, and runs at a constant speed of 1,800 revolutions per minute on a direct current line voltage of 220 volts. The type "D" rheostat is equipped with an automatic low voltage release, and is used for starting only.

The motor is mounted on the extended base of the saw table proper. It is connected to the saw mandrel, by a belt which passes through an opening at the back of the pedestal.

A reference to the illustration shows the extreme ease of operation brought about by the motor equipment. The five operating handles are all within a radius of about one foot. The table can be adjusted and the saw started or stopped without the operator moving a step. The motor is behind the machine out of the way, and takes up no space that would otherwise be useful, being beneath the overhanging table. The machine can be located in any position desired, being independent of line shafts.

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Dunham, Carrigan and Hayden, San Francisco, have recently issued the fourth edition of an interesting little booklet entitled, "Soft Steel vs. Common Iron." The book is a clear and forceful exposition of the relative merits of soft steel and common iron bars for general forging and smith work. The contents include chapters on the methods of manufacture and the physical properties including welding, threading and twisting of steel and iron bars. Numerous illustrations of bending and twisting tests are published, together with tables of the physical and chemical properties of various steel and iron bars.

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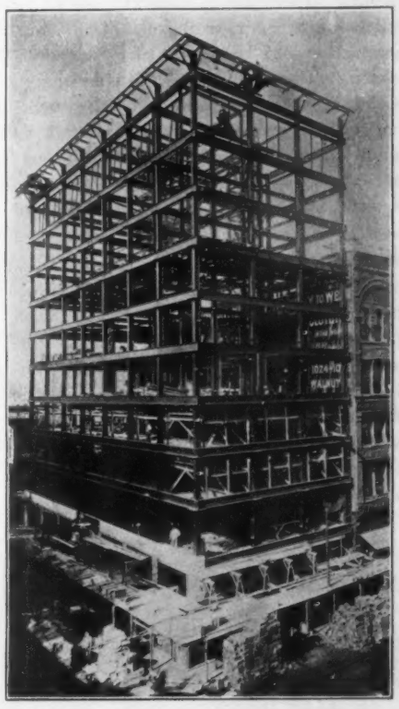
The Massey-Harris Co., Ltd., of Toronto, manufacturer of agricultural implements, which is now working to its full capacity, is increasing its capital from $8,000,000 to $10,000,000.

## A BUILDING BUILT OF BETHLEHEM SECTIONS.

The accompanying illustration shows the Boley building, Kansas City, Mo., which, it is believed, is the first building to be erected completely with the new Bethlehem "H" sections. This building is six stories high, with basement and sub-basement. It is 85 feet wide and 111 feet long. The



BOLEY BUILDING, KANSAS CITY, BUILT OF BETHLEHEM SECTIONS.

Bethlehem "H" columns used range from 10-inch, 54 pounds, to 14-inch, 265-pound sections. The beams used are 15, 18 and 20-inch special Bethlehem beams. The Kansas City Structural Steel Co. is the contractor for the building.

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Mary furnace of the Ohio Iron & Steel Co., Lowellville, O., was blown out Feb. 1.

## THE SUMMERS PLATE BENDING MACHINE USED IN STEEL CAR MANUFACTURE.

With the increased demand for all-steel railway cars and the desired use of greater lengths of material in heavy manufacturing operations, there has arisen the need of special machinery which will most advantageously handle the larger pieces. Along this line of progress, a plate bending machine has been invented and patented by E. W. Summers, of Pittsburg, which is particularly designed for service in plants manufacturing all steel gondola and hopper cars. The machine herewith described has a capacity for bending cold plates ⅜-inch in thickness and under, and up to 42 feet long. It can bend any angle from no bend around to an acute angle of 45 degrees, the width of the flange being maximum at 18⅜ inches. The advantage of the machine in steel car manufacture is in turning the flange about the top edges of the car from one plate, thus strengthening the structure and obviating the necessity of extensive riveting. The capacity of the ordinary plate press does not extend to such length of material, and the usual operation previously practiced for bending long plates was done on brakes and the material hammered down by hand.

The machine bends the plate simultaneously from end to end and with precision, as the bending line is absolutely straight. There is no stretching of material on the edge of the flange. Plates which have become warped from cooling after coming from the rolls, may be straightened in the bending operation.

In entering the machine, the plate slides on tables which form the flat portion of the mechanism, and are set on evener supports. The inner edge of the table is attached to the clamping beam which is moved up and down by means of hydraulic cylinders, and the scissor-shaped support causes the table to move up and down parallel with the clamping beam. With the water expelled from the cylinders, the clamping beam and table are lowered, and this permits

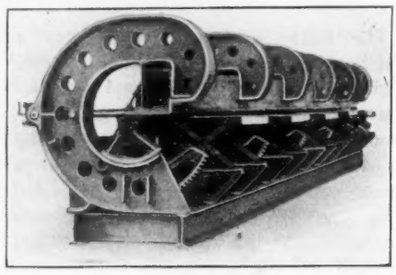

FIG. 1—SUMMERS PLATE BENDING MACHINE.

the plate to be slid into position upon the table and under the fulcrum plate. Adjustable gages are located on the 3¼-inch shaft at the rear of the machine. These gages rotate on the shaft into the position shown forming a stop for the edge of the plate and determining the width of the flange to be bent. The clamping cylinders are put then into operation, catching the plate and holding it firmly against the fulcrum in which position it is ready for bending.

A controller-operated lever is thrown in one direction causing the shaft to rotate, and the keyed pinions which are attached to the latter engage with a segmental rack in each main yoke of the machine. These cause the follower beams to rotate about the center of the yokes and to bend the plate over the nose of the fulcrum which is concentric with the inner circle of the main yokes. This inner circle is the track upon which the saddles carrying the follower beams travel. On the armature shaft of the motor, a magnetic friction brake is fixed, and when the current is broken, this overcomes the inertia of the machine, causing it to come to a dead stop. By throwing the controller lever in the opposite direction, the machine is reversed and the follower beams are returned to their original position, where they stop automatically, permitting the plate to be withdrawn. A number of bends may be made on the edge of the plate by making the initial bend and then pushing the plate farther into the machine, repeating the operation at any point desired as long as it is kept within the 18⅜-inch clear space inside the yoke. This clear space inside the yoke represents the maximum flange that can be made on a plate which is longer than the distance between the main yokes. Shorter plates which can come out between the yokes have no limit as to the width of the flange.

The Summers bending machine is self contained, and can be removed from place to place without being torn down. It is made of rolled steel and steel castings. The segmental gears and pinions are cut. The body of the machine is composed of a number of cast steel yokes which are placed 8 feet 2

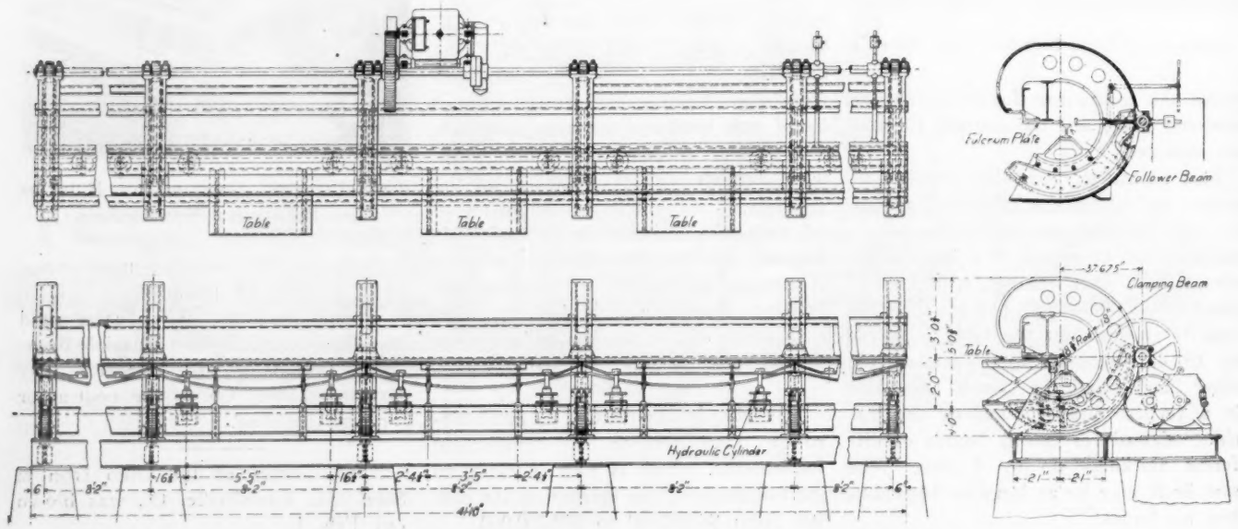


FIG 2—CONSTRUCTIVE DETAILS OF SUMMERS PLATE BENDING MACHINE.

inches center to center, and are supported on a 12-inch I-beam base. These yokes are spaced apart at the upper edge by a 15-inch 33-pound channel and an 18-inch, 55-pound I-beam, which together form the support of an 18 x 1⅜-inch steel fulcrum plate. The channel, beam and plate are continuous from end to end of the machine, and the inner edge of the plate forms the fulcrum point around which the material is bent. The particular machine described, exclusive of the motor, weighs about 36,000 pounds and is 41 feet 10 inches long. The power is furnished by an electric motor direct connected. The machine described is now in operation at the plant of the Standard Steel Car Co., at Butler, Pa.

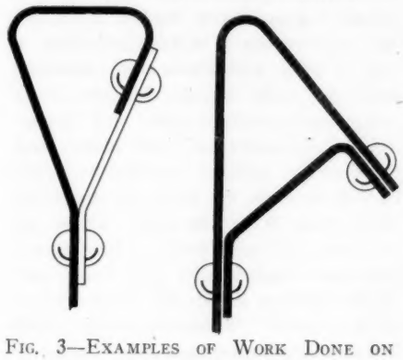

FIG. 3—EXAMPLES OF WORK DONE ON SUMMERS PLATE BENDING MACHINE.

Among the advantages of the machine, is that plates can be bent to any angle and duplicated as many times as desired without expensive dies having to be prepared for each different class of bend. An application of the machine that could be made by an enlarged type would be in bridge floor trough construction, avoiding much riveting work.

## NEW TYPE OF ORE HANDLING BRIDGE AT DUQUESNE AND YOUNGSTOWN.

At the Duquesne plant of the Carnegie Steel Co. a large ore handling bridge has recently been installed by Heyl & Patterson, Inc., of Pittsburg. This is the first bridge of its type built by this company and possesses a number of interesting features. The bridge spans an ore yard about 1,800 feet long, serving six blast furnaces. Adjacent to the furnaces are storage bins under which the larry cars operate to convey the ore from the bins to the furnace skips. One supporting leg of the bridge rests on this bin structure, and the other is carried by a concrete wall 26 feet high.

The bridge is of approximately 230 feet span between trucks, and has a cantilever extension at either end of about 65 feet. The iron ore is brought within reach of the bridge by transfer cars, which operate between the car dumper a thousand feet or more from the ore yard and run on tracks carried by the bin structure. These transfer cars discharge their load through an open track onto baffle plates, which form a temporary pile along the bin side of the storage yard. By means of the grab bucket the bridge gathers up the ore and places it in storage or removes it from the storage pile and delivers to transfer cars for distribution into various compartments of the bins, from which the supply for their blast furnaces is drawn as needed. At the end of the bridge farthest from the furnaces a "V" shaped leg furnishes the support, while at the furnace end a single shear leg supports the bridge as is shown in the accompanying illustrations.

Throughout the design of this structure flexibility was sought; this provides for the inequalities in travel of the two ends of the bridge and absorbs endwise shocks and thrusts, due to the quick acceleration of the trolley, without straining the bridge.

The bridge is propelled along its track by two 52-horsepower Westinghouse type "K" crane motors, there being one on each truck controlled from the cab. The two controllers for these motors are set adjacent, and are so arranged that a single handle moves either controller separately or both simultaneously. This arrangement allows one end of the bridge to be moved without affecting the other, and on a long travel should one end of the bridge structure get in advance of the other end, the higher speed motor will be retarded until the slow one overtakes it.

The bucket is a 10-ton Hulett patent excavating bucket, and is operated by two 225-horsepower Westinghouse crane-type motors of mill type construction. The bucket with its load of ore weighs approximately 50,000 pounds. The trolley traverse mechanism is driven by a 225-horsepower Westinghouse mill type motor, which motor is a duplicate of the two hoisting motors. The bucket operating motors are geared together and are controlled by a single magnetic type controller, providing also for a dynamic braking, and thus removing a considerable item of wear in the shape of brake blocks from the trolley. The bridge is of very high capacity, having been constructed to handle 600 tons per hour. It has, however, within the last four months, far outstripped this amount.

An equipment similar in all re-

FIG. 1—GENERAL VIEW OF YARDS AND BRIDGE AT DUQUESNE. HEYL & PATTERSON BRIDGE.

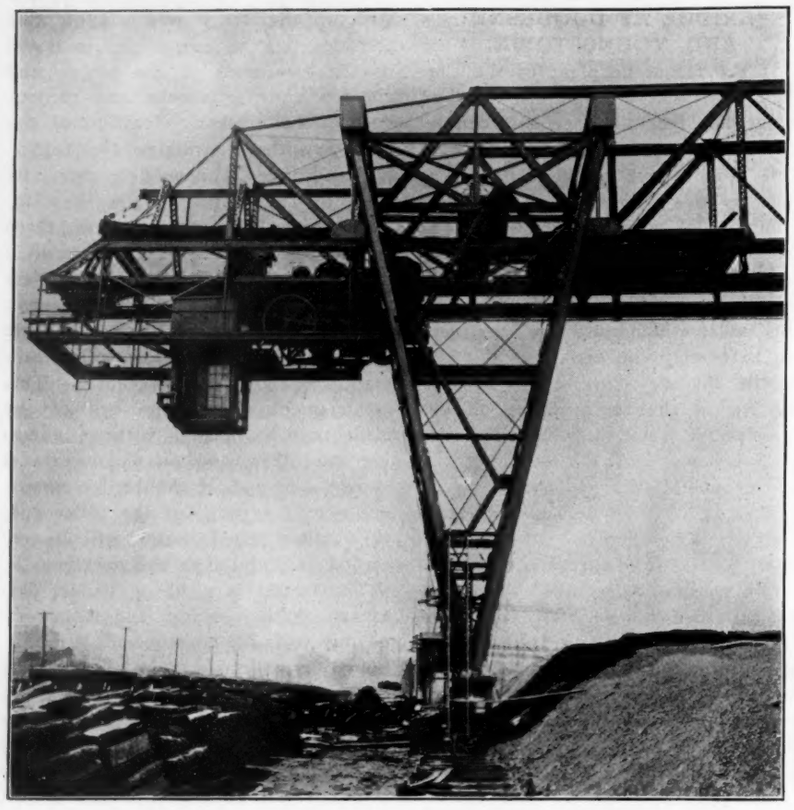

FIG. 2—DETAILS OF V LEG ON ORE BRIDGE AT DUQUESNE.

spects to this bridge has been supplied to the Youngstown Sheet & Tube Co., Youngstown, O. This machine also is giving satisfaction both as to speed and maintenance.

The length of the Youngstown bridge is approximately 100 feet greater than that of the Carnegie Steel Co., and the moving gear differs inasmuch as the bridge is propelled on its tracks by four motors instead of two, the trucks at all four corners being duplicates.

F. O. Ladd has begun the erection of a machine and blacksmith shop at Payton, Ia., following the fire of Dec. 10. The building is of brick and will be equipped with modern machinery.

# BOOK REVIEW.

**Parallel Tables of Logarithms and Squares.**. Fifth edition revised. By Constantine Smoley. New York. Engineering News Publishing Co. 448 pages. 4¾ x 7 inches. Flexible morocco. Supplied by THE IRON TRADE REVIEW for $3.50.

This edition is a combination of the old set of tables of the previous edition, to which has been added a multiplication table for rivet spacing, with a new set of five-decimal, logarithmic-trigonometric tables, comprising four separate tables, including a table of logarithmic-trigonometrical functions. The scheme of the book comprises parallel tables of logarithms and squares of feet, inches and fractions of inches, varying by 1/32-inch from 0 to 50 feet, and by 1/16-inch from 50 to 100 feet. These tables are followed by a table of angles and logarithmic functions corresponding to bevels or slopes given to a base of 12 inches. This table gives the amount and the logarithmic function of the angle whose natural tangent is a bevel given to 12 inches. It gives at once the angle corresponding to a bevel of, say 4½ inches in 12 inches, giving not only the number of degrees, minutes and seconds, but the logarithmic functions of that angle. The multiplication table for rivet spacing follows and then examples in the use of all the tables. The remainder of the book is taken up by logarithmic and natural trigonometric functions with their proportional parts. The book presents in compact form a great deal of useful information and should find wide application in the drafting room.

FIG. 3—HEYL & PATTERSON ORE BRIDGE AT YOUNGSTOWN.

# Markets Still Mark Time

A halting tendency was noticeable in the market generally throughout the week, and the purchasing public continued to be notably absent. Market authorities declare they do not look for pronounced activity for some time, especially since some of the leading men identified with railroad and industrial stocks have sailed for Europe.

The announcement on Monday of the decision of the supreme court to the effect that a violator of the Sherman anti-trust law cannot use the courts for the collection of debts and a gas company decision somewhat unsettled the market, but it closed slightly higher. Tuesday's market was dull, but closed higher, American Can preferred showing some strength. Metal shares declined at the close of Wednesday's session, the market being dull and irregular. The copper producers' chief selling agency announced a reduction of 1 cent a pound in the price of copper metal. Thursday again all grades of copper were reduced ⅛c. Stocks were dull but firm, except metal stocks, which were heavy and closed slightly lower. With the exception of a few specialties on Friday, the market was dull again and slightly lower, followed on Saturday by extreme dullness and a heavy tone at the close, which was fractionally lower.

Call loans began the week at 1½ per cent, advancing on Tuesday to 2½ and finally reaching 3 per cent on Thursday, the highest so far this year. This was noticeable especially after the treasury department called for the return of $30,000,000 in government deposits, to be paid by Feb. 24.

Clearing house banks reported a decrease of more than $17,000,000 in surplus reserve, and a loss of more than $22,000,000 in cash for the week. Trust companies showed corresponding gains. Clearing house banks reported loans decreased $16,776,700; deposits, decreased $33,657,800; reserve, decreased $19,225,200; surplus, decreased $10,856,450, and the percentage of reserve 25.77, compared with 26.53 the previous week. Non-member banks and trust companies showed loans, increased, $23,073,400; net deposits, increased, $42,724,600. Bank clearings for the week were 8½ per cent above the preceding week and 38 per cent above the corresponding week one year ago. Commercial failures for the week were 312, compared with 326 the preceding week and 356 the corresponding week last year. Shares were sold to the number of 2,578,649, compared with 3,206,964 the preceding week and 2,823,700 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $32,564,000, compared with $37,521,000 the preceding week and $11,675,000 the corresponding week last year.

## THE LEADING INDUSTRIAL SECURITIES.

| | Closing Quo. Feb. 6 | Changes in Week | Date 1909 Ann. M't'g. | Stock Outstanding | Basis | Dividend Last Declared | Date Last Div. Pay. |
|---|---|---|---|---|---|---|---|
| Allis-Chalmers | 14⅞ | + ⅜ | Sept. 2 | $19,820,000 | | ..... | ..... |
| Allis-Chalmers pr | 46¾ | ..... | | 16,150,000 | 7 cum | 1¾ Q. | Feb., 1904 |
| American Can | 8¼ | + ⅜ | Feb. 2 | 41,233,300 | | ..... | ..... |
| Am. Can pr | 75 | +2 | | 41,233,300 | 7 cum | 1¾ Q. | Jan., 1909 |
| Am. Car & Foundry | 50½ | +2 | June 24 | 30,000,000 | | ½ Q. | Jan., 1909 |
| Am. Car & Fdy pr | 111 | ..... | | 30,000,000 | 7 n. c. | 1¾ Q. | Jan., 1909 |
| American Loc | 56 | + ½ | Oct. 19 | 25,000,000 | 5 | 1¼ Q. | Aug., 1908 |
| American Loc. pr | 112¼ | ..... | | 25,000,000 | 7 cum | 1¾ Q. | Jan., 1909 |
| American Ship | 58 | ..... | Oct. 13 | 7,600,000 | 4 | 1 Q. | June, 1908 |
| American Ship pr | 104⅛ | ..... | | 7,900,000 | 7 n. c. | 1¾ Q. | Oct., 1908 |
| Am. Steel Foundries(new) | 36 | ..... | Dec. 2 | 17,184,000 | | ..... | ..... |
| Am. Steel Foundries, pr | 47½ | ..... | | 17,240,000 | 6 cum | 1 | Aug., 1904 |
| Barney & Smith | 40 | ..... | June 1 | 2,000,000 | 4 | 1 Q. | Sept., 1907 |
| Barney & Smith, pr | 95 | ..... | | 2,500,000 | 8 cum | 2 Q. | June, 1908 |
| Bethlehem Steel | 25¼ | +1½ | April 6 | 14,862,000 | | ..... | ..... |
| Bethlehem Steel, pr | 52 | ..... | | 14,908,000 | 7 n. c. | ¾ Q. | Feb., 1907 |
| Cambria Steel | 37½ | — ¼ | March 16 | 45,000,000* | 6 | 1½ S. A. | Feb., 1909 |
| Cambria Iron | 46 | ..... | | 8,468,000* | 4 | 2 S. A. | Sept., 1908 |
| Chicago Pneumatic Tool | 26 | — ½ | Feb. 15 | 6,145,800 | 4 | 1 Q. | Oct., 1907 |
| Colorado Fuel | 39½ | + ½ | Oct. 18 | 34,235,500 | | 3½ | April, 1902 |
| Crucible Steel | 8⅛ | ..... | Oct. 20 | 24,578,400 | | ..... | ..... |
| Crucible Steel, pr | 62 | —1 | | 24,436,500 | 7 cum | 1 Q. | Dec., 1907 |
| Empire Steel | 6 | ..... | April 27 | 1,254,770 | | ..... | ..... |
| Empire Steel, pr | 47 | ..... | | 2,500,000 | 6 cum | 1½ S. A. | Jan., 1909 |
| Fay & Egan | 100 | +10 | Feb. 18 | 1,000,000 | 6 | 1¾ Q. | Nov., 1908 |
| Fay & Egan, pr | 100 | ..... | | 1,000,000 | 7 cum | 1¾ Q. | Nov., 1908 |
| General Electric | 152½ | + ¼ | May 11 | 65,178,800 | 8 | 2 Q. | Jan., 1909 |
| Harbison-Walker | 18½ | ..... | Jan. 18 | 18,000,000 | | ½ | Oct., 1907 |
| Harbison-Walker, pr | 84⅞ | — ⅛ | | 9,600,000 | 6 cum | 1½ Q. | Jan., 1909 |
| International Pump | 38¾ | + ½ | June 8 | 17,762,500 | | 1 | April, 1905 |
| International Pump, pr | 84¾ | +2¼ | | 11,350,000 | 6 cum | 1½ Q. | Feb., 1909 |
| Lackawanna Steel | 40 | —3 | March 10 | 34,971,400 | | ..... | ..... |
| Lake Sup. Corp | 16¾ | + ¾ | Oct. 6 | 40,000,000 | | ..... | ..... |
| New York Air Brake | 82¼ | —2¾ | June 17 | 8,012,500 | 8 | 2 Q. | Oct., 1907 |
| Niles-Bement-Pond | 97 | ..... | Feb. 3 | 8,500,000 | 6 | 1½ Q. | Dec., 1908 |
| Niles-Bement-Pond, pr | 100 | ..... | | 2,000,000 | 6 cum | 1½ Q. | Nov., 1908 |
| Otis Elevator Co | 50 | ..... | March 15 | 6,375,300 | | 1½ S. A. | April, 1908 |
| Otis Elevator Co., pr | 94 | ..... | | 6,295,000 | 6 n. c. | 1½ Q. | Jan., 1909 |
| Penn. Steel | 50 | ..... | May 10 | 10,750,000 | | ..... | ..... |
| Penn. Steel, pr | 104 | ..... | | 16,500,000 | 7 n. c. | 3½ S. A. | Nov., 1908 |
| Pittsburg Coal Co | 12¼ | + ⅜ | March 9 | 28,104,600 | | ..... | Nov., 1906 |
| Pittsburg Coal Co., pr | 45½ | ..... | | 27,071,800 | 7 c. | 1¾ | April, 1905 |
| Pressed Steel Car | 41½ | + ⅞ | Feb. 17 | 12,500,000 | | 3 | Aug., 1904 |
| Pressed Steel Car, pr | 103 | +1½ | | 12,500,000 | 7 n. c. | 1¾ Q. | Feb., 1909 |
| Pullman | 171 | +2 | Nov. 10 | 100,000,000 | 8 | 2 Q. | Feb., 1909 |
| Railway Stl. Spring | 100¾ | +1 | March 4 | 13,500,000 | 4 | 1 S. A. | Oct., 1908 |
| Railway Stl. Spring, pr | | — ⅜ | | 13,500,000 | 7 cum | 1¾ Q. | Dec., 1908 |
| Rep. Iron & Steel | 24¼ | +1¼ | Oct. 20 | 27,191,000 | | ..... | ..... |
| Rep. Iron & Steel, pr | 85 | — ¼ | | 20,416,900 | 7 cum | 1¾ Q. | April, 1908 |
| Sloss-Sheffield | 79 | +3 | March 10 | 10,000,000 | 5 | 1 Q. | Dec., 1908 |
| Sloss-Sheffield, pr | 109⅞ | ..... | | 6,700,000 | 7 n. c. | 1¾ Q. | Jan., 1909 |
| U. S. Pipe & Fdy | 29¼ | +1¼ | June 23 | 12,500,000 | 4 | ½ Q. | Dec., 1907 |
| U. S. Pipe & Fdy., pr | 74⅞ | + ⅞ | | 12,500,000 | 7 n. c. | 1¾ Q. | Sept., 1908 |
| U. S. Steel | 52¼ | + ¼ | April 19 | 508,302,500 | 2 n. c. | ½ Q. | Mar., 1909 |
| U. S. Steel, pr | 113 | —1 | | 360,281,100 | 7 cum | 1¾ Q. | Mar., 1909 |
| U. S. Steel 5s | 103⅞ | ..... | | 463,798,000 | 5 | 5 A. | ..... |
| Va. Iron, Coal & Coke | 60 | ..... | Sept. 21 | 9,073,680 | | ..... | ..... |
| Westinghouse Elec | 80¼ | + ⅜ | June 16 | 27,173,200 | 10 | 2½ Q. | Oct., 1907 |
| Westinghouse Air Brake | 111½ | + ¼ | Oct. 5 | 14,000,000* | | 2½ Q. | Jan., 1909 |

Par value of shares, $100, except those starred (*), $50.

### Copper Stocks.

**New York.**—Amalgamated Copper closed 74¾, a net loss of ⅞.

**Boston.**—Butte Coalition closed 24, a net gain of 1¼; Calumet & Arizona closed 105, a net gain of 7; Calumet & Hecla closed 650, a net gain of 15; North Butte Mining closed 74⅜, a net gain of 2⅜; Quincy Mining closed 89¾, a net gain of ¼.

### Financial Notes.

Niles-Bement-Pond Co. declared the regular quarterly dividends of 1½ per cent on preferred, payable Feb. 15, and 1½ per cent on common, payable March 20; Pratt & Whitney Co., the regular quarterly dividend of 1¾ per cent on preferred, payable Feb. 15; Pressed Steel Car Co., the regular quarterly dividend of 1¾ per cent on preferred, payable Feb. 24; the International Harvester Co., the regular quarterly dividend of 1¾ per cent on preferred, payable March 1, no action being taken as to beginning disbursements on common stock; American Radiator Co., a dividend of 1¾ per cent on preferred, payable Feb. 15, and 1½ per cent on common, payable March 31, and an extra dividend of 2 per cent on common to be paid at the same time as the regular dividend.

# NEWS FROM MANY INDUSTRIES

**New Buyers:—**

The Prescott Power Co., Haverhill, Mass., has filed articles of incorporation, to deal in engines, boilers, shaftings and beltings, with $1,000 capital stock. President and treasurer, John F. Dearborn, and clerk, Charles H. Poor, Haverhill, Mass. are the incorporators.

A charter has been granted to the Union Sanitary Mfg. Co., Indianapolis, with $200,000 capital stock, to manufacture cast iron and enameled ware. The incorporators are: Harry J. Mulligan, Charles E. Gates, J. V. Ritts, Robert B. Kieth, L. C. Huesman, I. G. Smith and D. C. Byers.

Thomas E. Lauback, Burton B. Parsons and Emery P. Van Epps, Syracuse, N. Y., have incorporated the Livingston & Van Epps Co., Syracuse, N. Y. The company has $5,000 capital stock, and will manufacture engines, boats, motor cars, vehicles, machinery, machines and tools.

The Springfield Lock Nut & Washer Co., Springfield, Mass., has been granted articles of incorporation to deal in bolts, nuts and washers, with a capital of $100,000. Albert E. Knowlton, of Dorchester, as treasurer, and Harold P. Knowlton, 410 Old South Building, Boston, are the incorporators.

The R. W. Marshall Co., New York City, to manufacture and deal in electrical and mechanical appliances, apparatus, etc., with $150,000 capital stock, has these incorporators: Charles C. Mann, Flatbush, N. Y.; Frank L. Quinby, 60 Wall street; Eugene C. Bogwell, 545 West 142nd street, both of New York City.

The American Water Supply Co., Newark, N. J., to deal in machinery, tools, mechanical devices, etc., with $400,000 capital stock, has been granted a certificate of incorporation by Lawrence W. Luellen and Hugo Moore, 115 Broadway, New York City, and Austin M. Pinkham, 27 State street, Boston, Mass.

The Interstate Commercial Co., Fulton, N. Y., to manufacture and deal in machinery, tools, appliances, patents, etc., with a capital of $25,000. has these incorporators: Harry E Smith, Clifton Park, N. J.; William E. Disbrow, 38 West Twenty-seventh street; Stephen S. Newton, 199 Washington street, both of New York City.

The General Sherardizing & Stamping Co., Cincinnati, has been incorporated by Napoleon B. Spencer, Robert C. Bunze, Charles M. Conklin, Bert L. Baldwin and Worcester B. Morrow, with an authorized capital of $5,000.

A charter has been granted to the Sanitary Metal Basket Co., Lafayette, Ind., with a capital of $20,000., to manufacture galvanized iron baskets, pails, etc. The incorporators are Winfield S. Crane, Oliver P. Morehouse and Edward E. Galle.

The Motor Appliance Co. of America, Perth Amboy, N. J., has been incorporated to manufacture machinery, mechanical devices and engineering appliances, with a capital of $25,000. The incorporators include Joseph P. Hall, 73 Warren street, New York; Albert S. DeVeau, Brooklyn, and Clarence C. Sibley, Perth Amboy, N. J.

The Strain & Stanford Co., of New York City, manufacturer of machinery. tools, etc., for grading and repairing streets, highways, etc., excavating, etc,. has been chartered with $50,000 capital stock. James H. Strain, 482 East Twenty-first street, Brooklyn, N. Y.; Edward F. Sanford, 317 West Ninety-third street and Garhardt H. Bassenschutt, 118 West Fifty-eighth street, both of New York, are the incorporators.

The Hobbs-Ivey Machinery & Equipment Co., Norfolk, Va., machinery, has been chartered with $25,000 capital stock. J. B. Ives is president and L. F. Hobbs secretary and treasurer.

A charter has been granted to the Economy Friction Drive and Pulley Co., Boston, to deal in pulleys and machinery, with $100,000 capital stock. The officers are: President, William H. Lafaelle; vice president John A. McDonald, 32 Staniford street; treasurer, Amos M. McLean, 6 Beacon street; clerk, Daniel E. Irwin, 395 Dudley street, all of Boston.

Articles of incorporation have been filed by the Aetna Machine Co., Toledo, with $40,000 capital stock. Those interested are: C. A. Byers, E. F. Abbey, M. K. Abbey, L. P. Byers and George C. Bryce.

A certificate of incorporation of the Charles A. Ring Iron & Steel Co., of Brooklyn, N. Y., has been filed. The directors are: C. E. Ring, W. O. Fitch and S. L. Taylor, of Brooklyn. The capital stock is $150,000.

George W. Green, Thomas C. Donaldson, Philip J. Heeslip and others of Peterborough, Ont., have been incorporated as the H. Walker Green Co., Ltd., with $100,000 capital, to carry on business as iron founders and machinery manufacturers.

The M. & W. Brazing Co., of New Haven, Pa., has been incorporated to engage in the business of brazing steel and other metals. The incorporators are Joseph Whitaker, Albert Hooper and G. Myers, all of New Haven, Pa. The capital stock is $100,000.

Application has been made for a charter by the Standard Steel Co., which is capitalized at $50,000 and will have its principal office at Knoxville, Tenn. The incorporators are Walter McCoy, Robert S. Young, Charles S. Smith, Charles M. Rodgers and W. B. Sullins.

The Trisko Foundry Co., Superior, Wis., has filed articles of incorporation. The company will do a general foundry, machine and merchandise business, and will have a capital of $5,000. Max Trisko, Joseph P. Weber and Adolph Jacobson are the incorporators of the company.

The Miller Brass & Copper Co., New York City, to manufacture fire extinguishers and fire escapes, with $30,000 capital, has been incorporated by Frank Lewis, 176 West Eighty-first street; Rudolph H. Lock, 150 Blacker street; Charles A. Miller, 1133 Broadway, all of New York City.

A charter has been granted to the Hunter Construction Co., Youngstown, with a capitalization of $4,000. The incorporators are John Hunter, John W. Douglass, John McIntosh and John W. Winsnes, all of Youngstown. Mr. Hunter and Mr. Winsnes have until now been connected with the Brown-Hunter Co., steel construction, of Youngstown.

The Mehlberger Iron Co. of Fort Smith, Fort Smith, Ark., has been incorporated with $30,000 capital stock. The company is composed of Conrad Mehlberger, R. E. Frizell, Fred Warner, J. E. Richardson and Philip Fredericks, of which Conrad Mehlberger is president and treasurer, and J. E. Richardson, secretary. The company has been reorganized by Conrad Mehlberger, proprietor of the former Mehlberger Iron Co.

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**New Construction:—**

An addition is being built to the Stanley G. Flagg foundry at Pottstown, Pa.

Millin Bros., Patch Grove, Wis., are preparing plans for a machine shop to be run in connection with their saw mill.

The John Rice Foundry & Machine Works, Stevens Point, Wis.,

has installed a one-ton cupola in order to work up small orders without delay.

At the Wheeling Steel Works, Benwood, W. Va., operating has been resumed after important repairs have been made, including partial rebuilding of the soaking pits and the construction of a new cupola. The new cupola will have three times the capacity of the old one.

The Clark-Fefel Mfg. Co., Baltimore, Md., has leased from the Securities Corporation the property on West street and Peach alley, South Baltimore, where it will establish a machine shop, 85 x 167 feet, five stories, of brick. A number of improvements and alterations will be made.

The Freeman Pattern Works, Toledo, O., has just installed a complete equipment for making all kinds of metal patterns, and is now in a position to fill orders for anything in the shape of patterns, as it has a large shop and a large force of expert mechanics and is now ready for business.

The Ohio Malleable Iron Co., Columbus, O., advises respecting extensions to its plant that no outside equipment will be bought, as the company is itself making everything which it will need with the exception of one 150-horsepower Miller gas engine which it has contracted for to be delivered in February.

The Allyne Brass Mfg. Co. of Michigan, Detroit, advises that it has purchased the building formerly owned by the Ford Motor Car Co., which it is using for the manufacture of high grade lines of plumbers' brass goods. It is also building additional foundry capacity to care for its increased foundry business.

The McCord Mfg. Co., Detroit, advises that it is erecting a small brass foundry to do light work for its own manufacturing purposes. The contract has been let and the work is nearing completion. The company further advises that it will not be in the market for new material other than the usual foundry requirements.

Samuel H. Neuman, of Algoma, Wis., is building a foundry for the manufacture of brass fixtures to be used in connection with the Plumbers' Woodworking Co., Kewaunee, Wis. The addition will be 30 x 60 feet. It is expected that the foundry will be in running order within 60 days, and will cost $10,000. It will be operated by Mr. Neuman himself.

The H. J. Hartman Foundry Co., Grand Rapids, Mich., is replacing with solid concrete, piece at a time, the old frame construction. The only portion of the original building standing is the south side, which will be torn out in the spring. Two years ago, the molding room was doubled in capacity, and last fall a fireproof storage pattern house was erected.

The reconstruction of the No. 3 stack of the Shenango Furnace Co., at Sharpsville, Pa., is being actively pushed. The furnace is expected to be ready for blowing in about March 20. The improvements will make the stack a thoroughly modern one.

The Chester Gray Iron Foundry Co., Chester, Pa., which was recently incorporated, is planning to start work shortly on several new buildings, which include a main foundry building of brick, 40 x 60 feet, with a wing extension 54 x 60 feet, ovens, sand shed, office building, etc. The contract has been let to L. A. Hewes, Chester, Pa. The foundations will be started at once.

The Hoopeston Horse Nail Co., Hoopeston, Ill., has let the brick work contract to Weaver & Timmons, for a new factory building to replace that destroyed by fire in December. The building will be of brick and steel. Two extra lines of machinery to double the former capacity have been ordered, and other steps taken toward securing an early rebuilding of the plant. When work is resumed in the summer, the plant will have a daily capacity of 10 tons of horse nails.

The Andrews Wire & Iron Works, Rockford, Ill., has secured plans for an office building and dining room for employes, 48 x 53 feet, two stories, of concrete. The ground floor will be given over to the offices of the superintendent and the dining room and kitchen. A plating room, 19 x 22, will be a part of the new structure. The second floor will contain reception room, purchasing department, and other rooms for members of the office force.

The Memphis Machine Works, Memphis, Tenn., recently partially destroyed by fire, will be rebuilt at once, the contract having been let to a local contractor. In addition, a two-story brick and concrete building will be erected, the entire cost to be about $10,000.

The Columbus Iron & Steel Co., Columbus, O., has awarded to the McClintic-Marshall Construction Co. the contract for building a steel ore trestle, 1,100 feet long and requiring about 300 tons of steel. This is in addition to the steel ore bins recently constructed.

Bids are being received for the new plant to be built by the M. L. Andrew Co., Colerain and Alabama aveunes, Cincinnati, manufacturing special machinery. The principal building will be 40 x 160 feet, two stories, brick construction. Adjoining it will be a boiler house 21 x 28 feet, one story.

The Kansas City Structural Steel Co., Kansas City, Mo., is planning to nearly double the capacity of its plant at Argentine. It is remodeling buildings formerly occupied by a department of the Consolidated Smelting & Refining Co., giving it additional floor space of 20,000 square feet. Machinery will be installed as soon as the buildings are ready.

The Messenger & Parks Mfg. Co., Aurora, Ill., sheet metal goods for buildings, recently incorporated, advises that it has not decided just where it will locate, but at present is occupying the site formerly occupied by Messenger & Parks. However, it expects to begin building operations early in the spring, and will require some new machinery.

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**General Industrial Notes:—**

The Streator Metal Stamping Co., a North Dakota corporation with a capital of $250,000, has been authorized to locate in Illinois with a capital of $140,616.

G. H. McKinley is preparing to open a brass foundry at his plant on Twenty-fifth street, Moline, Ill. He will put in four furnaces at the start, believing that there is sufficient business in Moline alone to keep the plant busy.

The Vulcan Iron Works, Grand Rapids, Mich., chose these directors at the annual meeting, and will later select the officers, David Wolf, E. B. Jones, W. H. Jones, J. W. Peck, L. K. Peck, L. T. Peck and L. C. Peck.

The Anti-Frictional Bearings Co., which was recently organized in Tampa, Fla., and is financed by Tampa and Atlanta, Ga., capital, is planning to open shops at Atlanta shortly. The company will specialize on its bearings.

A. Daugherty, formerly of Houston, Tex., has established a brass foundry at 647 Main street, Beaumont, Tex., which will be known as the Oil City Brass Works. A specialty of propellers will be made, which will be cast from a combination method.

At the annual meeting of the stockholders of the Niles Car & Mfg. Co., Niles O., the report of President F. C. Robbins was read and approved and the dividend declared on common and pre-

ferred stock. A number of satisfactory orders are now on the books. The old directors were re-elected as follows: F. C. Robbins, J. A. Hanna and A. G. Webb, of Cleveland; George D. Kirkham, of Warren; Charles G. Harris, A. G. McCorkle, T. E. Thomas, L. H. Young, and B. F. Pew, of Niles. The directors will later elect the officers.

Dyer & Rosenberger, proprietors of the St. Cloud Iron Works, St. Cloud, Minn., are planning to incorporate. The capital stock will be $75,000, fully paid and the present proprietors will take all the stock. The name will be the St. Cloud Iron Works Co., and these officers and directors will be elected: President, Henry Dyer; vice president, Katherine Dyer; secretary-treasurer, J. B. Rosenberger and Margaret Rosenberger.

H. Swoboda Co., 419-421 North Third street, Philadelphia, advises respecting its recent fire that part of the building was saved by good work on the part of the fire department. The building is four stories, 40 x 60 feet. The equipment of the company is direct connected. The company expects to be ready for bids on hangers, shafting, belting, lathes, planers, milling machines, drill presses, etc., by Feb. 10. The company's specialty is wood working machinery.

The Scranton Axle Works, Scranton, Pa., has been reorganized by the election of the following officers: President, S. S. Spruks; vice president, W. L. Connell; secretary, H. E. Paine; treasurer, Otto J. Robinson; assistant treasurer, G. V. Decker; general manager, O. C. Hall, of Auburn, N. Y. E. H. Ripple retired from the presidency because of ill-health. R. R. Weisenfluh retires as secretary-treasurer. The business outlook is encouraging, since orders for 80,000 sets of axles are booked for delivery this year.

The Oklahoma Stove & Structural Iron Co., Oklahoma City, Okla., is planning to erect on seven acres of land recently purchased, a foundry 70 x 200 feet, a mounting and ware room, 60 x 100 feet, two stories, and a boiler room, 30 x 40 feet, of brick, all to be in one L-shaped building. The company was recently incorporated for $75,000 with these officers: President, William H. Mathias, formerly of Cincinnati; vice president, William F. Bush; treasurer, Davis L. Meyers; secretary, John H. Meyers, who, together with Charles H. Adkins, compose the board of directors.

The McMullen Machinery Co., Grand Rapids, Mich., has been organized with $15,000 capital and will establish a woodworking machinery depot in that city at 58 South Ionia street. A full line of woodworking machines for every purpose, factory equipment, machine knives and bits, etc., will be carried in stock. The agencies for a number of representative lines have already been secured, although this concern would like to hear from manufacturers of woodworking equipment who wish to introduce their product into western and northern Michigan. G. K. McMullen, the principal stockholder of this concern, was until recently, and for more than 10 years, sales manager of the Fox Machine Co., Grand Rapids, Mich.

The iron foundry of the Oklahoma School Desk Mfg. Co., Cherokee, Okla., has been placed in operation with a force of 40 men. The foundry will make castings and metal work for the company's desks.

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**Fires:—**

The plant of the Marshallton Iron & Steel Co., Marshallton, Del., was damaged to the extent of $5,000 Jan. 27.

The plant of the Louis Metal & Iron Co., Piqua, O., was damaged Jan. 23, the loss being probably $20,000.

The plant of the American Tubular Axle Co., Toledo, O., was seriously damaged Feb. 2, the loss being placed at $100,000.

The blast furnace plant of the Sloss-Sheffield Steel & Iron Co., at Sloss, Ala., was damaged to the extent of about $6,000 Jan. 31.

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**Trade Notes:—**

The F. M. Prescott Steam Pump Co., Milwaukee, Wis., has opened a district office in El Paso, Tex., which will be in charge of W. R. Thurston. All business emanating from the southwest portion of the United States and from Mexico will be handled by this office.

The new Seattle office of the McClintic-Marshall Construction Co., Pittsburg, will be at 839 Central building. C. F. Boyce is sales manager in charge.

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## TRADE PUBLICATIONS.

PRESSES.—The Ferracute Machine Co., Bridgeton, N. J., is distributing a 68-page catalog on presses for sheet and bar metal. A number of lines which have not heretofore been illustrated appear in this catalog, comprising drop presses, toggle drawing presses, horizontal double ended screw presses, horizontal double ended screw presses for shells for cannon cartridges and improved automatic coining presses. These are all illustrated and tables of sizes of each type are presented.

CRANES. — The Northern Engineering Works, Detroit, is issuing a small booklet illustrating various crane installations which it has made.

CENTRIFUGAL PUMPS.—Horizontal single and multi-stage centrifugal pumps are described in bulletin No. 9 issued by the D'Olier Engineering Co., Philadelphia. The bulletin gives the features of the pump and a tabulation of the information required in order to determine the best type of pump for a given service.

STAMPINGS.—The Avery Mfg. Co., Cleveland, is issuing a circular illustrating special stampings of automobile parts and other specialties.

BELT CONVEYORS.—The Robins New Conveyor Co., Chicago, has issued bulletin No. 1, comprising C. Kemble Baldwin's paper, "The Belt Conveyor," which was read before the American Society of Mechanical Engineers at its Detroit meeting June, 1908. This paper was abstracted in THE IRON TRADE REVIEW.

PATTERNS—An attractive booklet of 22 pages entitled, "Tested Patterns," has been issued by the Ferro Machine & Foundry Co., Cleveland. This booklet describes and illustrates the process of making patterns in either wood or metal, which is a specialty of this company.

INDUSTRIAL CARS.—The Youngstown Car Mfg. Co., Youngstown, O., has issued an illustrated catalog showing different styles of dump cars, flat cars, special cars, etc. The range and variety of the product is well shown by the catalog, which includes everything from the smallest dump car and factory truck to the largest ingot car for iron and steel mills. Standard freight cars, sugar cane cars and logging cars are also included. Size, 8 x 10 inches, 64 pages.

OIL BURNING APPLIANCES.—The Hauck Mfg. Co., Brooklyn, N. Y., has put out an illustrated eight-page bulletin, series 27, describing its portable oil burners designed for skin drying molds, heating ladles, burning on castings, firing up cupolas, brazing, etc. The apparatus is illustrated in detail and some interesting data are given.

WIRE BRUSHES.—The American Wire Brush Co., 277 Greenwich street, New York, has recently brought out a variety of literature, illustrating and describing its brushes in which the wires are fastened by a novel and patented method. A particularly complete line is made for use in foundries, forge and machine shops.

CHILLED STEEL SHOT.—The Harrison Supply Co., Boston, importer of chilled steel shot for sand blast use, has sent out a very handsome calendar, "The Pride of Kentucky," accompanying it by a cheery note carrying the season's greetings.

HEATER COILS.—A new type of hot blast heater coil or radiator for indirect heating systems is described in a 16-page pamphlet issued by the Green Fuel Economizer Co., Matteawan, N. Y. The novel feature of this heater is that the circulation of steam, air and condensation is positive and continuous, and in the natural direction of gravity drainage from inlet to outlet.

SWITCHBOARDS.—A publication which should be of considerable assistance and interest, especially to central station managers, has just been issued by the General Electric Co., Schenectady, under the title, "A Guide to the Design of Medium and Small Capacity Central Station Switchboards." In preparing the publication an effort has been made to discuss only representative cases, pointing out both the desirable and undesirable features. The bulletin, which is numbered 4638, goes into details, giving the arrangements, dimensions and connections of various styles of boards.

## BICKFORD FIRE BRICK COMPANY
## CRESCENT FIRE BRICK

We manufacture exclusively hand made, high grade fire brick for

**Blast Furnaces and Hot Blast Stoves, Open Hearth, Heating and Puddling Furnaces, Malleable Iron Plants, Glass Works, Cupolas, Rotary Cement Kilns and all high grade uses.**

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**FIRE BRICK**
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We manufacture at our own Plants the highest quality of Magnesite, Chrome, Silica, and Fire Clay Brick with personal attention of interested and expert managers. Our brands are the Highest Quality made and we would be pleased to prove this to you in actual work, as we have with others.

**Six Modern Plants, - - - - - - - 200,000 Daily Capacity.**

Located in Pennsylvania, Ohio, and Kentucky. The only company furnishing all grades of furnace material from their own plants.

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**For all purposes**

***Five Large Plants***

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Manufacturers of High Grade Fire and Silica Brick for all purposes. Coke Oven Brick a specialty.

**Main Office, Connellsville, Pa.**

## THE NILES FIRE BRICK CO.

**ESTABLISHED 1872,**

Manufacturers of High Grade

**FIRE BRICK**

**Brand Niles No. 1**

Blast Furnace Linings, Rolling Mill Heating Furnaces and Malleable Furnaces a specialty

**Office and Works: Niles, Ohio**

## METALLURGY OF CAST IRON

By Thos. D. West.

***628 pages.*** ***153 illustrations.*** ***Price $3.00.***

THE author begins with a chapter relating to the manufacture of coke and carries the reader through the operations involved in blast furnace practice, showing how iron is affected by changes during its manufacture. Advice is given for purchasing and sampling iron. The elements in cast iron and their physical effects are dwelt upon, typical mixtures being shown for all classes of castings. Methods for calculating mixtures according to their chemical contents are given and the general utility of chemical analyses explained. The latter part of the book is given over to the testing of cast iron, records being appended of a number of investigations with which Mr. West has been connected. About 50 pages are devoted to selected tables of general utility to the founder.

**Book Department**

**THE PENTON PUBLISHING COMPANY, CLEVELAND, O.**

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SIMPLE CORLISS ENGINES from 50 to 1,200 horse power.
COMPOUND CORLISS ENGINES from 200 to 2,000 horse power.
SIMPLE AUTOMATIC ENGINES from 25 to 600 horse power.
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BELTED UNITS, 250 and 125 volts, direct current.

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from one million to 12 million capacity, suitable for waterworks, steel plants, furnaces: Worthington, Barr, Wilson-Snyder, Laidlaw-Dunn-Gordon and other first-class makers.

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Loew-Victor power pipe machine, cap. 1″ to 4″, NEW.
Loew-Victor No. 1 pipe machine, cap. ¼″ to 2″, NEW.
Loew-Victor No. 2 pipe machine, cap. 1″ to 4″, NEW.
Loew-Victor No. 3 pipe machine, cap. 1¼″ to 6″, NEW.
Jerecki No. 10 pipe machine with engine, cap. 1″ to 4″.
Peerless improved pipe machine, cap. ¼″ to 2″.
4″ Borden hand power pipe machine, cap. 1½″ to 4″.
2″ Cox & Son pipe threading and cutting off machine.
National double head bolt cutter, cap. up to ⅝″.
Merriman No. 2 patent bolt threading machine.
Borden hand power pipe threading machine, cap. 1½″ to 6″.
Pittsburg "B" pipe attachment for ¼″ to 5½″ pipe, NEW.
Schlenker No. 4 double head bolt cutter.

**WICKES BROTHERS**
**117-119 Fourth Avenue PITTSBURG, PA.**

## FOR SALE
### Second-Hand Machinery in Good Condition

Because of the installation of machinery of larger capacity, we have discarded the following machinery and offer it for sale at attractive figures:

1—Wright Twin Engine, 150 H. P.
1—Brown & Sharpe Plain Screw Machine, hole through spindle is 1¼″, turns any length to 6″.
1—Dowel and Rod Machine, Iron Frame, capacity ¼″ to ¾″.
1—No. 6 Sturtevant Blower, 10″ Outlet.
1—No. 11 Buffalo Blower, 16″ Outlet.
1—Champion Blower, 7″ Outlet.
1—Cut-off Saw made by E. & B. Holmes Machinery Co., Buffalo, N. Y.
1—Keyway Machine made by Trevor & Co., Lockport, N. Y.
1—Cut-off Saw made by Connell & Dengler, Rochester, N. Y.
1—2½″ Shaft Cut-off Machine made by Warren, Haskell & Co., Boston, Mass.
1—6 Arm Friction Cut-off Clutch 36″ Diameter for 4″ Shaft.

**THE JOHNSTON HARVESTER CO., Batavia, N. Y**

## SECOND-HAND "HIGH GRADE" MACHINERY

**BORING MACHINES**
(1) 2B Binsse Horizontal
(1) "F" Baker Special
(2) 30 in. Bullard
(1) 37 in. Bridgeport—(1) head
(1) 84 in. Betts, 2 heads
(1) 10 ft. Pond floor boring machine

**DRILL PRESSES**
(8) Barnes Friction
(4) 1-spindle sensitive
(3) 2-spindle sensitive
(1) 4-spindle Reed sensitive
(1) 6-spindle Quint turret
(1) 20 in. Barnes upright
(1) 24 in. Pratt & Whitney
(2) 24 in. Baker high speed
(4) 25 in. W. F. & J. Barnes
(2) 26 in. Lodge & Davis
(1) 30 in. Prentice Bros. (new)
(1) 83 in. Bement-Miles
(1) 34 in. Barnes—gear feed
(1) 24 in. Fosdick Radial

**GEAR CUTTERS**
(1) Grant-Lees hobbing machine
(1) 30 in. x 8 in. Brainard spur
(1) 36 in. x9 in. x5p Gould & Eberhardt
(2) 50 in. x11 in. x5p Gould & Eberhardt

**GRINDERS**
(2) Cincinnati Cutter & Tool
(1) Pratt & Whitney cutter and surface
(1) No. 2 Brown & Sharpe Universal

**LATHES**
(1) 14 in. x 6 ft. Prentice, taper attachment
(1) 14 in. x 6 ft. Flather' comp. rest
(1) 14 ft. x 6 ft. Hendey, taper attachment
(1) 14 in x 6 ft. Flather, taper attachment
(1) 14 in. x 6 ft. Whitcomb Blaisdell turret on shears
(2) 14 in. x 6 ft. Le Blond
(1) 14 in. x 8 ft. Flather
(2) 15 in. x 6 ft. Blaisdell
(1) 16 in. x 6 ft. Reed
(2) 16 in. x 6 ft. Lodge & Shipley
(2) 16 in. x 6 ft. Pratt & Whitney
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(1) 22 in. x 12 ft. Walcott, comp. rest
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(1) 24 in. x 10 ft. Lodge & Barker
(1) 26 in. x 12 ft. Reed—chuck fitted
(1) 62 in. x 20 ft. Cummer
(1) 62 in. x 25 ft. Putnam, motor driven

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(2) No. 3 Diamond, 52 x 1 1-4 spindle
(2) No. 7G Diamond, 48 x 1 1-4 spindle

**MILLING MACHINES**
(1) No. 2 Pratt & Whitney—hand
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(1) No. 3 Brown & Sharpe universal
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(1) 20 in. x 20 in. x 4 ft. Wheeler, 1 head
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(1) D75 Ferracute
(1) No. 62 Toledo
(1) No. 8 Greenerd arbor

**SAWS**
(1) Miller-Falls Hack
(1) 6 in. Cochrane-Bly
(1) 6 in. Newton

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(1) 14 in. Lodge & Davis
(1) 15 in. Pratt & Whitney tool room
(1) 16 in. Stockbridge, back geared
(1) 20 in. Hendey
(1) 22 in. Walcott, shifting belt
(1) 24 in. Hendey
(1) 24 in. Potter & Johnston
(1) 26 in. Cincinnati, triple geared
(1) 28 in. Hendey

**TURRET LATHES**
(2) No. 2 Pratt & Whitney wire feed
(2) No. 3 Pratt & Whitney wire feed
(1) No. 4 Bardons & Oliver
(1) No. 5 Warner & Swasey
(2) 2 in. x 24 in. Jones & Lamson
(1) 2 in. x 24 in. Pratt & Whitney
(1) 21 in. Gisholt with taper att.
(1) 22 in. Bullard "B" machine
(2) 22 in. Lodge & Shipley

**THE MOTCH & MERRYWEATHER MACHINERY CO.**
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CAR PUSHERS, DERAILERS, HEAVY CHAIN, PLATES 12′ to 36′ CUT TO SKETCH.

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1—48″ x 21′ Putnam Triple Geared Engine Lathe, Used six months.
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**WM. WARD MACHINERY CO., 601 House Building Pittsburg, Pa.**

## "G.M." SOREW CUTTING ENGINE LATHE

**16 inch by 8 feet**

DIMENSIONS

Swings over shears 16 1-4 inches. Swings over carriage 10 1-4 inches. Takes between centers 4 feet 10 1-2 inches. Diameter of hole through spindle 1 5-16 inches. Size of front bearing of spindle 2 9-16 inches diameter by 4 1-2 inches long. Size of rear bearing of spindle 2 3-16 inches diameter by 3 inches long. Traverse of compound rest 4 3-4 inches. Length of carriage bearing on shears 25 inches. Nose of spindle is 2 1-4 inches in diameter. 1 13-16 inches in length; has 6 U. S. Standard threads per inch.

Lathe complete with Large and Small Face Plates, Compound Rest, Steady Rest, Power Cross Feed Change Gears. Splined Screw with interlocking device for belt or gear drive. Wrenches, Large Cabinet Leg and Friction Countershaft. Weight 1,750 lbs.

Manufactured by

**The G. M. Lathe Company,** Lennox Bldg. CLEVELAND, O.

## AIR COMPRESSORS FOR SALE

1—Ingersoll Straight Line, piston inlet, size 24″ x 26¼″ x 30″. 1650 cu. ft. per minute, 80 to 90 lbs. pressure. Steam driven.

1—Ingersoll Straight Line, piston inlet, size 22″ x 22¼″ x 24″. 950 cu. ft. per minute, 80 to 100 lbs. pressure. Steam driven.

1—Norwalk Compound, diameter steam cylinder, 20″, stroke 20″, air cylinders 13½ & 18″, capacity 950 cu. ft. per minute, 80 to 100 lbs. pressure. Steam driven.

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1—Hall Class "B" Duplex Straight Line, size 12″ x 16″ x 14″, capacity 810 cu. ft. at 40 lbs. pressure. Steam driven.

1—Hall Class "A" Straight Line, size 12″ x 18″ x 14″, 510 cu. ft. per minute at 25 lbs. pressure. Steam driven.

1—Hall Class "C" Tandem Compound Straight Line, size 14″ x 15″ x 9½″ x 14″, capacity 360 cu. ft. per minute at 100 lbs. pressure, equipped with Meyer valve. Steam driven.

1—Franklin, single, size 12″ x 12″ x 12″, capacity 240 cu. ft. 80 to 100 lbs. pressure. Steam driven.

1—Ingersoll single, size 12″ x 12″ x 12″, capacity 240 cu. ft. per minute 80 to 100 lbs. pressure. Steam driven.

1—Hall Class "H" Duplex, straight line, size 14″ x 14″, capacity 620 cu. ft. per minute, 60 to 100 lbs. pressure. Belt driven.

1—Hall Class "G," single straight line, size 10″ x 10″, capacity 130 cu. ft. per minute at 60 to 100 lbs. pressure. Belt driven.

1—American single, size 14″ x 10″, capacity 240 cu. ft. per minute 25 to 35 lbs. pressure. Belt driven.

1—Franklin, single, size 10″ x 10″, capacity 130 cu. ft. per minute at 60 to 100 lbs. pressure. Belt driven.

1—Hall Class "G," single straight line, size 9″ x 9″, capacity 88 cu. ft. 80 to 100 lbs. pressure. Belt driven.

**W. R. Beatty Machinery & Equipment Company**
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BLAST FURNACE SUPERINTENDENT or manager, energetic, experienced, up-to-date. At present engaged, but open for early engagement. Can make old plants produce satisfactory results. Medium sized or large furnaces. Mechanically, or hand filled, merchant or steel works product. Address "Capable," care THE IRON TRADE REVIEW, Cleveland, O.

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**STRICTLY MODERN GRAY IRON FOUNdry for sale, completely equipped and in daily operation on profitable machinery work. Located in Michigan town with excellent shipping facilities. Best of reasons for selling and will make liberal terms. Full information cheerfully furnished. Address Box 338, THE IRON TRADE REVIEW, Cleveland, O.**

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FOR SALE, SEVEN THOUSAND FIVE hundred dollars' worth of stock in a new foundry and machine shop in railroad town of 11,000, near smelters and other manufacturing plants, in the oil and gas field—gas two and three cents a thousand. Employ as many as 12 molders. Good reasons for selling. Address Box 57, care PENTON'S LIST, Cleveland, Ohio. p.

**WANTED PARTY WITH A FEW THOUsand dollars to join me in exploring iron property on Mesabi iron range. R. B. Higbee, Germania Life Bldg., St. Paul, Minn.**

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FOR SALE—ONE 23 X 60 SINGLE CYLinder, double acting, Harris Corliss, pendulum ball governor, with section cast iron fly wheel, 18 ft. x 38". Good order, requirements changed, electric power being used. Address Almond Mfg. Co., Ashburnham, Mass. p.

UNUSUAL BARGAINS IN GAS ENgines. Ten 2 to 3 H. P. Standard make. Absolutely new engines fully guaranteed—special reason for selling. Address Box 55, PENTON'S LIST, Cleveland, O. p.

**ONE HAMILTON CORLISS ENGINE for sale, 125 H. P., good condition. Address Western Iron & Foundry Co., Wichita, Kansas.**

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ONE NO. 2 SCHWARTZ OIL FURNACE for sale, complete with pipe connections, smoke stack, ventilating hood and two extra sets of new linings. Can be bought at a decided bargain if taken at once. Louisiana Contracting Co., St. Louis, Mo.

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**In any quantity, metal or fibre. Dies, Stamping and Screw Machine Work. Quadriga Mfg. Co., 18 So. Canal St., Chicago, Ill.** p.

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ONE ESPEN-LUCAS PLAIN SLAB MILLing machine for sale, diameter of spindle 4 in.; width of table 18 in.; length of feed to table 48 in. Will admit work 22 in. wide. Has variable automatic feed ½ in. to 7 in. per minute. Screw for adjusting spindle head has micrometer adjustment. Condition good as new. Will be sold at a bargain. Graham Nut Co., Pittsburg, Pa.

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SECOND-HAND LEATHER BELTING for sale, single and double in A-1 condition. Some as good as new. Address Louis Kraft, Rochester, N. Y.

FOR SALE—1 30" POST DRILL, WITH countershaft, $10. One 25" post drill, $5. Two motors, 220 volts, 2.5 amperes, 1-2 H. P. 1600 R. P. M. One motor, 110 volts, 5 amperes, 1-2 H. P. 1600 R. P. M. One motor, 220 volts, 20 amperes, 5 H. P. 1250 R. P. M. The W. W. Sly Mfg. Co., Cleveland, O. p.

**FOR SALE, 90 H. P. ATLAS BOILER; 60 inches diameter; 60 tubes, 3½ inches; length, 14 ft.; shell 5/16 thick; dome 30 x 30, with cast fronts and grate. Good for 75 lbs. pressure. First-class condition. $250.00. Also 200 H. P. Frick upright engine, 18 x 18 cylinder, 180 R. P. M., no flywheel. The Kansas City Bolt & Nut Co., Kansas City, Mo.** p.

PATENT FOR SALE. A NEW NAILless horseshoe, very useful. Anyone desiring to buy such patent, address or call on Adam Gimbut, 31 W. 14th place, Chicago, Ill.

FOR SALE, BOILER COMPOUND OUTfit, consisting of 1,500-gallon steel steam jacket tank, one 2,000-pound portable drop lever, one 23 x 32 Howe scale, complete with appliances, 10 H. P. boiler, boiler compound formulas, etc. Address Acme Engineering & Construction Co., Milwaukee, Wis. p.

FOR SALE, BALANCE WHEEL 70" diameter, 14" face, 6 7/8" bore, rim 2½" thick, weight 2,800. Cast iron pulley, 70" diam., 14" face, 6 7/8" bore, rim 1" thick, weight 1,500. Sturgis Machine Co., Sturgis, Mich. p.

FOUNDRY BARRELS FOR SALE—BATtery of four 36" x 48" Whiting spur geared tumbling barrels, in stock, never used, ready for immediate shipment. Also cupolas, ladles, elevators and other foundry equipment. We can supply your wants in hand power or electric cranes, also foundry blowers and other equipment. Sam'l. W. Hay's Sons, 301 Farmers Bank Bldg., Pittsburg, Pa. p.

**A POSTAL CARD WILL BRING YOU our list of second-hand and rebuilt woodworking machinery, engines, boilers, etc. All rebuilding and overhauling done in our own shops, guaranteed as represented at prices especially attractive to close buyers. Your inquiries will be appreciated and receive prompt attention. Currier-Koeth Mfg. Co., Coudersport, Pa.** p.

## SCRAP WANTED.

TAKE NOTICE. WE ARE BUYERS OF all grades of scrap metals, such as scrap copper, brass, lead, babbitt metals, factory metal skimmings, drosses, metal clippings, spelter, etc. Advise quality and quantity you have on hand to offer and we will name best prices f. o. b. your city. H. Kander & Co., Bowling Green, Ohio.

## WANTED, MISCELLANEOUS.

WANTED, SECOND-HAND 2" SIZE, BELT driven pipe threading machine. Preferably E. C. & B. make. Must be in first-class working order and unbroken. Room 302 at 313 Sixth Ave., Pittsburg, Pa. p.

WANTED, ONE 20 OR 22" DRILL PRESS, also one emery grinder with countershaft, both second-hand. Please state condition and price of each, also maker's name. Emery grinder must swing 16" wheel. B. Barrett's Sons, Wooster, O. p.

WANTED, AN 85 TO 100 H. P. ENGINE for belt connection to 55 K. W. generator that will work in a space of 6 to 8 ft. in width and 10 to 15 ft. in length—a Russell, Buckeye or Ideal preferred. L. H. Shepherd Milling Co., Charlottte, Mich. p.

## CHEMISTS, ASSAYERS, SAMPLERS OF ORES, ETC.

**ORES SAMPLED, TESTED, AND Assayed. Analysis of ores, fuels, limestone, iron and steel, clay and cements. Ethelbert Ely, Dover Laboratory, Dover, N. J. Established 1868.**